Opinion Dynamics

Boston | Headquarters

617 492 1400 tel
617 497 7944 fax
800 966 1254 toll free

1000 Winter St
Waltham, MA 02451

# Ameren Missouri Program Year 2019 Annual EM&V Report

## Volume 3: Business Portfolio Report

**June 18, 2020**

# Table of Contents

# Table of Tables

# Table of Figures

# 1. Executive Summary

This volume presents the evaluation results of the Ameren Missouri PY2019 portfolio of business energy efficiency programs as described in Ameren Missouri's 2019-21 Missouri Energy Efficiency Investment Act (MEEIA) Energy Efficiency Plan. Results for the Residential Portfolio and the Demand Response Portfolio are provided in separate volumes.

The following programs comprise the Business Portfolio:

- Standard Incentive Program
- Custom Incentive Program
- Small Business Direct Install (SBDI) Program
- New Construction (NC) Program
- Retro-Commissioning (RCx) Program

In addition to these five programs, this volume also includes the Business Social Services (BSS) Program.[1] Collectively, the six programs are referred to as the "business programs" or the "BizSavers programs."

The following sections present overarching key evaluation findings and recommendations for the business programs. The remainder of this volume is organized as follows:

- Chapter 2 presents the general evaluation approach for the business programs, including overarching evaluation objectives and an overview of the PY2019 evaluation activities and methodologies.
- Chapters 3 - 7 present evaluation results for the six BizSavers programs.

In addition, the Appendix to Volume 3 contains additional detail on the methodology used to estimate free ridership (FR) and market partner spillover (MPSO) as well as project-level summaries of our desk reviews and onsite visits, by program.

## 1.1 Portfolio Impact Results

The PY2019 Business Portfolio achieved 83,364 MWh of first year net energy savings and 21.76 MW of first year net demand savings, exceeding its goals, as outlined in Ameren Missouri's 2019-21 MEEIA Energy Efficiency Plan, by 7% and 12%, respectively. The portfolio also exceeded its target for last year demand savings in the 15+ Year effective useful life (EUL) category (124% of target) but fell slightly short of target in the 10-14 Year EUL category (94% of target).[2]

[1] While considered part of Ameren Missouri's low-income portfolio, the BSS Program is included in this volume because of implementation and evaluation similarities with the other business programs: (1) it is implemented by the same implementation contractor using similar program processes and (2) it was evaluated using similar evaluation methods. As such, much of the overarching content in this volume is applicable to the BSS Program.

[2] Throughout this volume, we refer to "goals" and "targets." Ameren Missouri's 2019-21 MEEIA Energy Efficiency Plan sets annual first year energy and demand savings **goals**. In addition, Ameren Missouri developed impact **targets** that are used to determine Earnings Opportunities.

Savings-weighted portfolio-level gross realization rates (RR) ranged from 94% for last year demand savings in the 10-14 Year EUL category to 99% for last year demand savings in the 15+ Year EUL category, while savings-weighted net-to-gross ratios (NTGR) ranged from 85% to 86%.

Table 1-1 summarizes first year and last year annual gross and net savings for the Business Portfolio in PY2019.

Table 1-1. PY2019 Business Portfolio Savings Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| **First Year Savings** | | | | | | | |
| Energy Savings (MWh) | 103,457 | 94.6% | 97,865 | 85.2% | 83,364 | 78,196 | 107% |
| Demand Savings (MW) | 25.91 | 97.5% | 25.27 | 86.1% | 21.76 | 19.37 | 112% |
| **Last Year Demand Savings** | | | | | | | |
| <10 EUL (MW) | - | n/a | - | n/a | - | 0.57 | 0% |
| 10-14 EUL (MW) | 6.25 | 94.2% | 5.89 | 85.4% | 5.03 | 5.34 | 94% |
| 15+ EUL (MW) | 19.66 | 98.6% | 19.38 | 86.3% | 16.72 | 13.45 | 124% |

The Standard Program was the largest program in Ameren Missouri's Business Portfolio in PY2019, contributing 73% of first year ex post net energy savings and 56% of first year ex post net demand savings. The Standard Program was instrumental in exceeding portfolio goals as it achieved 207% of its first year net energy goal and 198% of its first year net demand goal. All other programs fell short of first year net impact energy and demand goals.

Portfolio-wide, the primary driver of low program-specific performance relative to net savings goals was lack of participation. For all programs other than Standard, even gross ex ante savings are below net goals (in some cases significantly), indicating that the shortfall was not primarily a result of low RRs or NTGRs.

Table 1-2 summarizes first year annual gross and net savings for all programs in the PY2019 Business Portfolio.

Table 1-2. PY2019 Business Portfolio First Year Savings Summary by Program

| Program | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal Net | % of Goal |
|---|---|---|---|---|---|---|---|
| **First Year Energy Savings (MWh)** | | | | | | | |
| Standard | 76,553 | 94.0% | 71,972 | 84.2% | 60,622 | 29,220 | 207% |
| Custom | 16,807 | 97.7% | 16,427 | 87.9% | 14,441 | 34,247 | 42% |
| SBDI | 6,385 | 96.8% | 6,181 | 87.8% | 5,427 | 8,702 | 62% |
| New Construction | 2,626 | 74.6% | 1,959 | 79.0% | 1,549 | 3,349 | 46% |
| Retro-Commissioning | 1,086 | 122.0% | 1,324 | 100.0% | 1,324 | 2,679 | 49% |
| **Total Business** | **103,457** | **94.6%** | **97,865** | **85.2%** | **83,364** | **78,197** | **107%** |
| **First Year Demand Savings (MW)** | | | | | | | |
| Standard | 14.69 | 97.7% | 14.36 | 84.2% | 12.10 | 6.10 | 198% |
| Custom | 8.71 | 95.7% | 8.34 | 87.9% | 7.33 | 9.89 | 74% |
| SBDI | 1.21 | 100.5% | 1.22 | 87.8% | 1.07 | 1.51 | 71% |
| New Construction | 0.63 | 82.0% | 0.51 | 81.2% | 0.42 | 0.89 | 47% |

| Program | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal Net | % of Goal |
|---|---|---|---|---|---|---|---|
| Retro-Commissioning | 0.67 | 125.1% | 0.84 | 100.0% | 0.84 | 0.98 | 86% |
| **Total Business** | **25.91** | **97.5%** | **25.27** | **86.1%** | **21.76** | **19.37** | **112%** |

Program performance relative to target net demand savings by EUL category varied widely, but overall, the Business Portfolio achieved 94% of target last year net demand savings in the 10-14 Year EUL category and 124% of target last year net demand savings in the 15+ Year EUL category. The Standard Program was again the primary driver of portfolio success, achieving 126% of target last year net demand savings in the 10-14 Year EUL category and 306% of target last year net demand savings in the 15+ Year EUL category.

While the Custom Program accounted for only 17% of the Business Portfolio's ex post net energy savings it significantly contributed to the portfolio's ex post last year demand savings, particularly in the 15+ Year EUL category (5.97 MW or 36% of the total Business Portfolio).

Table 1-3 summarizes last year annual gross and net savings for all programs in the PY2019 Business Portfolio.

Table 1-3. PY2019 Business Portfolio Last Year Demand Savings Summary by Program

| Program | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Target Net | % of Target |
|---|---|---|---|---|---|---|---|
| **< 10 Year EUL (MW)** | | | | | | | |
| Standard | - | n/a | - | n/a | - | 0.55 | - |
| Custom | - | n/a | - | n/a | - | - | n/a |
| SBDI | - | n/a | - | n/a | - | 0.01 | - |
| New Construction | - | n/a | - | n/a | - | - | n/a |
| Retro-Commissioning | - | n/a | - | n/a | - | - | n/a |
| **Total Business** | **-** | **n/a** | **-** | **n/a** | **-** | **0.57** | **0%** |
| **10-14 Year EUL (MW)** | | | | | | | |
| Standard | 4.28 | 94.4% | 4.04 | 84.2% | 3.40 | 2.70 | 126% |
| Custom | 1.58 | 97.7% | 1.55 | 87.9% | 1.36 | 1.38 | 99% |
| SBDI | 0.19 | 100.4% | 0.19 | 87.8% | 0.16 | 0.62 | 26% |
| New Construction | 0.18 | 52.9% | 0.09 | 86.8% | 0.08 | 0.08 | 101% |
| Retro-Commissioning | 0.02 | 100.0% | 0.02 | 100% | 0.02 | 0.55 | 4% |
| **Total Business** | **6.25** | **94.2%** | **5.89** | **85.4%** | **5.03** | **5.34** | **94%** |
| **15+ Year EUL (MW)** | | | | | | | |
| Standard | 10.41 | 99.1% | 10.32 | 84.2% | 8.69 | 2.84 | 306% |
| Custom | 7.12 | 95.3% | 6.79 | 87.9% | 5.97 | 8.51 | 70% |
| SBDI | 1.03 | 100.5% | 1.03 | 87.8% | 0.91 | 0.87 | 104% |
| New Construction | 0.45 | 93.7% | 0.42 | 79.9% | 0.33 | 0.81 | 41% |
| Retro-Commissioning | 0.65 | 126.0% | 0.82 | 100.0% | 0.82 | 0.43 | 191% |
| **Total Business** | **19.66** | **98.6%** | **19.38** | **86.3%** | **16.72** | **13.45** | **124%** |

As noted above, this volume also includes the results of the BSS Program evaluation. The BSS Program performed well in PY2019, achieving 112% of its first year net energy savings goals and 113% of its first year

net demand savings goals. Table 1-4 summarizes first year and last year annual gross and net savings for the BSS Program in PY2019.

Table 1-4. PY2019 BSS Program Savings Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| First Year Savings | | | | | | | |
| Energy Savings (MWh) | 1,072 | 103.2% | 1,106 | 100.0% | 1,106 | 987 | 112% |
| Demand Savings (MW) | 0.21 | 105.0% | 0.22 | 100.0% | 0.22 | 0.19 | 113% |
| Last Year Demand Savings | | | | | | | |
| <10 EUL (MW) | - | n/a | - | n/a | - | 0.02 | 0% |
| 10-14 EUL (MW) | 0.02 | 105.0% | 0.02 | 100.0% | 0.02 | 0.11 | 22% |
| 15+ EUL (MW) | 0.18 | 105.0% | 0.19 | 100.0% | 0.19 | 0.06 | 322% |

## 1.2 Key Process Findings and Recommendations

Ameren Missouri's Business Portfolio is largely a continuation of previous program cycles, with the same program implementer offering the same core set of business energy efficiency programs.[3] A key difference from the previous program cycle, affecting both program planning and implementation, are annual first year savings goals as well as last year demand savings targets by EUL category.

At the start of the new MEEIA cycle, the implementation team was able to leverage its prior experience, existing systems, and established "BizSavers" brand to provide a variety of business customers with well-run and well-received programs. Across the portfolio, our research has found highly satisfied customers and market partners who are appreciative of the programs and the energy efficiency opportunities they provide. As Ameren Missouri and the implementation team enter their second year of the MEEIA plan cycle, they are well positioned to build upon a successful PY2019.

Based on our process research, we provide the following general finding, followed by key program-specific conclusions and recommendations:[4]

- An overarching theme the evaluation team heard across the Standard, SBDI, and BSS programs was the desire by customers and market partners for the program to add incentives for prescriptive exterior lighting measures. While participants and market partners are generally highly satisfied with the programs and the various program components, this single recommendation was offered repeatedly. In fact, all interviewed market partners who reported spillover-qualifying installations noted that exterior lighting was a key measure that they are installing due to program influence – but that much more would be installed if incentives were available.

### Standard and Custom Incentive Programs

- Conclusion: When given the opportunity, neither participants nor market partners provided many recommendations for program improvements. However, the fact that the BizSavers programs do not

[3] New offerings for business customers include the BSS Program and the Business Demand Response Program.
[4] No process conclusions are provided for the New Construction and Retro-Commissioning programs as the PY2019 evaluation did not include a process assessment for these two programs.

currently offer prescriptive outdoor lighting was a recurring theme across all of our process evaluations.

  - Recommendation: Continue to expand the slate of program-eligible measures. Outdoor lighting is the only one that arose as a specific recommendation, but others likely offer potential.

- Conclusion: While awareness of the incentive bonus was mixed among recipients, 21% of Standard participants who received a bonus believed that the project would not have been completed before January 1, 2020 without the bonus. Although the full effect of the incentive bonus is unclear, it is apparent that at least some participants changed the timing and size of their project due to the bonus.

  - Recommendation: While offering additional bonuses can help stimulate some changes in customer behavior, the bonuses may need to be of higher value to really drive much of a response. They may also need to be offered with an earlier end-date to fully capture their potential and help smooth out participation over the program year and avoid a large influx of last-minute projects. Finally, a bonus can be a powerful tool to drive participation in under-utilized components of the program, e.g., non-lighting measures, or within under-served populations.

- Conclusion: The PY2019 Standard Program was heavily dominated by lighting measures. While these offer a cost-effective way of achieving savings targets, changing market conditions will necessitate a shift of program activity towards other enduses, if program savings are to be sustained over the longer term.

  - Recommendation: Continue to harvest lighting savings, while available, but begin increased promotion of other enduses among trade allies and customers to facilitate the transition away from lighting as the LED market matures.

## Small Business Direct Install Program

- Conclusion: While Ameren Missouri is running a smooth program that satisfies customer and Service Provider needs and expectations, the PY2019 SBDI Program fell short of its annual energy savings and demand savings goals. It attained only 62% of the energy goal and 71% of the demand goal. Currently, the SBDI Program is essentially a lighting program. The addition of HVAC measures for PY2020 will be beneficial in increasing the breadth of offerings and potential depth of savings, but only if it is accompanied by sufficient incentive levels and Service Provider support.

  - Recommendation: Continue to expand the slate of program-eligible measures. Outdoor lighting is the only one that arose as a specific recommendation, but others likely offer potential.

- Conclusion: Recruitment of new customer participants will become increasingly difficult as the Service Providers continue capturing the “low-hanging fruit.” New strategies will be needed to maintain or grow participation rates.

  - Recommendation: Increase customer-focused, strategic, targeted marketing to customers. This will not only help inform customers about energy efficiency opportunities but will help to steer customers to the program (in contrast to relying solely on Service Providers to locate them).

## Business Social Services Program

- Conclusion: The program is singularly focused on interior lighting with virtually no uptake of non-lighting measures. This is the result of insufficient incentive levels for non-lighting measures to induce energy-efficient upgrades and a primary focus of most BSS Service Providers on lighting measures.

- Recommendation: If the program wishes to achieve deeper savings, it should consider (1) adding incentives for exterior lighting and adjusting non-lighting incentives (including HVAC measures) to a level that is attractive enough to induce uptake and (2) recruiting Service Provider with non-lighting specializations in order to create more opportunities to develop these projects within the BSS Program. However, given the limited budget, depth of savings should be weighed against maximizing the number of social service organizations that can be served, a balance the program was actively seeking to strike in PY2019.

## CSR Mandated Research Objectives (4 CSR 240-22.070(8))

The Missouri Code of State Regulations (CSR) requires that demand-side programs, operating as part of a utility's preferred resource plan, are subject to ongoing process and impact evaluations that meet certain criteria. Table 1-5 summarizes responses to the CSR process evaluation requirements for the Ameren Missouri's suite of BizSavers programs.

Table 1-5. PY2019 CSR Process Questions

| CSR Required Process Evaluations Questions | Findings |
|---|---|
| What are the primary market imperfections that are common to the target market segment? | ▪ The primary market barriers to adoption of energy-efficient equipment in the business sector are lack of awareness of energy saving opportunities and programs, the high cost of energy efficiency equipment, access to financing or capital, and uncertainty about expected bill savings.<br>▪ Evaluation results show that barriers differ by business size. Small business customers are less aware of energy saving opportunities beyond lighting whereas medium and large businesses are more likely to see lack of access to financing as a barrier. The upfront costs of upgrades are a barrier for all businesses regardless of size. |
| Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments? | ▪ Ameren Missouri's BizSavers portfolio serves businesses of varying sizes and sectors. The SBDI Program recognizes the unique challenges of small businesses though small businesses can still participate in the Standard or Custom Programs if the offerings are a better match to customer needs. The current target audience for the SBDI Program is commercial electric customers that are classified as Small General Service Rate 2(M). This covers a wide range of market segments. The SBDI Program is generally serving the majority of the market segments existing in the General Service Rate 2(M), although participation has been concentrated in a few segments (office, retail, warehouse).<br>▪ The new Business Social Services Program serves nonprofit organizations that provide services to the low-income public. The PY2019 program was small in scope, with 31 projects completed by 14 organizations that offer a mix of family, social, and healthcare services. Given the small participation and targeted outreach strategy to-date, insights into the reach of the program and appropriateness of market segmentation are limited but are expected to increase as the program matures.<br>▪ The SBDI program appears to have been successful in serving renters, a frequently underserved market segment by business portfolios. According to program tracking data renters accounted for 38% of PY2019 SBDI Program participants, which tracks well with Ameren Missouri's business customers overall (36% are renters) according to market research in support of Ameren Missouri's 2019 potential study. |
| Does the mix of enduse measures included in the | ▪ Evaluation results found participants were relatively dissatisfied with the breadth of measure offerings. In some cases, participants and market partners were |

| CSR Required Process Evaluations Questions | Findings |
|---|---|
| program appropriately reflect the diversity of enduse energy service needs and existing enduse technologies within the target market segment? | dissatisfied with the list of eligible measures and in other cases they indicated low incentives rendered an officially eligible measure effectively ineligible.<br>▪ Standard and Custom Program participants reported relatively low levels of satisfaction with the range of equipment that is eligible for incentives from Ameren Missouri, with only 61% and 55% of participants reporting being "very satisfied". Market partners revealed similar levels of dissatisfaction with measure eligibility, and most frequently suggested adding outdoor lighting to the list of available measures.<br>▪ In PY2019, the SBDI Program only dealt with lighting. Because it is designed as a Fast-Track, direct install program, it may be that the ability to add other measures is limited. However, HVAC measures are being added in PY2020, which suggests there are likely other opportunities for additional measures that would meet the needs of small business customers.<br>▪ While the BSS Program offers a range of measures across different technologies, the program was almost exclusively focused on lighting measures in PY2019. Our evaluation found that incentive levels for non-lighting equipment appear to be insufficient to induce adoption in this market segment. One Service Provider noted that he was unable to complete any of the scoped non-lighting projects due to incentive levels. If measure uptake for a broader mix of enduse technologies is desired, the program may need to revisit incentive levels for non-lighting measures (balancing the potentially high cost relative to achievable savings against other, non-financial objectives). |
| Are the communication channels and delivery mechanisms appropriate for the target market segment? | ▪ According to market research in support of Ameren Missouri's 2019 potential study, awareness of Ameren Missouri BizSavers Programs is relatively low among the target market. Just over one-third of customers (36%) are aware of the programs offered. Medium and large businesses are much more likely to be aware of Ameren Missouri BizSavers Programs than small businesses (60% compared to 33%). These results suggest that additional communication or delivery of messages through alternative channels is needed for small businesses.<br>▪ Ameren Missouri focuses most of its outreach on trade allies rather than direct communication with business customers, which can be seen in the large percentage of participants who learned of the program through a contractor (83% for Custom Program participants and 77% for Standard Program participants). While it is important that contractors are aware of Ameren Missouri programs and are enlisted as program advocates, direct customer outreach could support trade allies by increasing interest in programs among business customers. |
| What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation for select enduses/measure groups included in the Program? | ▪ Continue to expand the slate of program-eligible measures. Outdoor lighting is the only one that arose as a specific recommendation, but others likely offer potential.<br>▪ Revisit incentive levels to improve the uptake of non-lighting measures.<br>▪ Continue to expand the network of trade allies and Service Providers, focusing on increasing the diversity of services offered and market segments targeted.<br>▪ Increase customer-focused, strategic, targeted marketing to customers. |

## 1.3 Cost-Effectiveness Results

Cost-effectiveness analysis compares the benefits of an energy efficiency or demand response program with the cost of delivering it, expressed as the ratio of the net present value (NPV) of lifetime benefits to the costs. A cost-effectiveness ratio of greater than 1.0 means that the benefits generated by the program exceeded its costs. Cost-effectiveness can be assessed from several different "perspectives," using different tests, with each test including a slightly different set of benefits and costs.

The evaluation team assessed the cost-effectiveness of each of the six BizSavers programs, using five costs-effectiveness tests recommended by the California Standard Practice Manual[5] and used in prior evaluations:

- **Total Resource Cost (TRC) Test:** Perspective of all utility customers (participants and nonparticipants) in the utility service territory;
- **Utility Cost Test (UCT):** Perspective of utility, government agency, or third-party program implementer;
- **Ratepayer Impact Measure (RIM) Test:** Impact of efficiency measure on nonparticipating ratepayers overall;
- **Participant Cost Test (PCT):** Perspective of the customers installing the measures; and
- **Societal Cost Test (SCT):** Perspective of all utility customers (participants and nonparticipants) in the utility service territory.[6]

Table 1-6 summarizes the cost-effectiveness results for the six BizSavers programs. All six programs were cost-effective in PY2019 based on the TRC test, the UCT, and the PCT. Only the RIM test for the Standard, New Construction, SBDI, and BSS programs resulted in cost-effectiveness ratios of less than 1.0.

Table 1-6. Summary of BizSavers Cost-Effectiveness Results

| Program | TRC | UCT | RIM | PCT |
|---|---|---|---|---|
| Standard | 2.92 | 3.92 | 0.64 | 5.90 |
| Custom | 1.92 | 3.49 | 1.05 | 2.02 |
| Retro-Commissioning | 5.74 | 6.78 | 1.45 | 5.63 |
| New Construction | 1.43 | 2.56 | 0.71 | 2.16 |
| Small Business Direct Install | 2.79 | 2.94 | 0.61 | 5.57 |
| Business Social Services | 2.42 | 1.04 | 0.44 | 8.11 |

Cost-effectiveness results for the overall Business Portfolio – including the Business Demand Response Program but excluding the BSS Program – are presented in Volume 1.

[5] California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects. October 2001.
[6] Although we developed SCT results as a part of our evaluation, this section does not show the results because they are equivalent to TRC results due to two factors: (1) Ameren Missouri does not include non-energy impacts in cost-effectiveness testing, and (2) Ameren Missouri uses the same planning assumptions for both tests, including the discount rate.

# 2. Evaluation Approach

While the evaluation team conducted separate evaluations of each of the six BizSavers programs, most research objectives and evaluation activities were common across all of the programs. To reduce repetition, this chapter discusses research objectives common to all business programs and presents an overview of the evaluation approach and activities conducted to address the research objectives. Additional, program-specific detail, where needed, is presented in the individual program chapters.

## 2.1 Research Objectives

The business portfolio evaluation was designed to address numerous process, gross impact, net impact, and cost-effectiveness objectives. A fifth category of objectives focused on responding to the five key research questions stipulated in 4 CSR 240-22.070(8). The research objectives addressed by the PY2019 business portfolio evaluations include:

### Process Objectives

- Characterize program participation with respect to the number and characteristics of participants and completed projects;
- Assess how well the educational information, energy savings opportunities, and implementation process are understood by customers;
- Measure customer and contractor satisfaction, with program processes and implementers, and motivations for participating;
- Ensure that the implementer's tracking system contains the data necessary to support program evaluation;
- Identify opportunities for improvement in customer experience; and
- Provide evaluation results that can be used to improve the design and implementation of the Standard Incentive Program.

### Gross Impact Objectives

- Verify program tracking data;
- Verify measure installation;
- Verify expected useful life (EUL) assumptions for lighting measures; and
- Estimate the first year and last year[7] ex-post gross energy (kWh) and demand (kW) savings.

### Attribution/Net Impact Objectives

- Determine net-to-gross ratios (NTGR), including an assessment of free ridership and participant and market partner spillover (not applicable to all programs);
- Estimate the first year ex-post net energy (kWh) and demand (kW) savings; and
- Estimate the last year ex-post net demand (kW) savings, by EUL category.

[7] Last year savings represent the energy or demand savings expected to occur in the final year of a measure's expected useful life.

### Cost-Effectiveness

- Assess the cost-effectiveness of each business program and the business portfolio as a whole using industry-standard cost-effectiveness tests;
- Ensure alignment of cost-effectiveness testing assumptions and parameters with the PY2019 business evaluation results, Ameren Missouri's TRM,[8] and industry best practices; and
- Provide total program benefits, costs, net benefits, and cost-effectiveness testing results.

### CSR Mandated Research Objectives (4 CSR 240-22.070(8))

- What are the primary market imperfections that are common to the target market segment?
- Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?
- Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?
- Are the communication channels and delivery mechanisms appropriate for the target market segment?
- What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation for select end uses/measure groups included in the Program?

## 2.2 Evaluation Activities and Methodologies

This section provides an overview of the evaluation activities undertaken as part of the PY2019 evaluation, including a high-level description of common methodologies. The combination of evaluation activities for each program was based on factors such as levels of program participation, the type and size of energy efficiency projects, and the number and type of market partners[9] relevant to the program.

Table 2-1 summarizes the evaluation activities, by program.

Table 2-1. Evaluation Activities by Program

| Evaluation Activity | Standard | Custom | SBDI | NC | RCx | BSS |
|---|---|---|---|---|---|---|
| Program Manager and Implementer Interviews | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Program Material Review | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Tracking System Review | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Participant and Market Actor Research** | | | | | | |
| Participant Survey | ✓ | ✓ | ✓ | - | - | - |
| Participant In-Depth Interviews | - | - | - | ✓ | - | ✓ |
| Market Partner Survey | ✓ | ✓ | - | - | - | - |
| Service Provider In-Depth Interviews | - | - | ✓ | - | - | ✓ |

[8] Our ex post evaluation relied on most recent TRM version available. Ameren Missouri revised the approved 2019-2021 MEEIA Cycle Appendix F (Deemed Savings Table) and Appendix G,H,I (TRM Volumes 1-3), in November 2019 (referred to as "Ameren Missouri TRM" or "TRM Revision 3.0").

[9] The program implementer refers to participating contractors as "market partners." Registered market partners are referred to as "trade allies."

| Evaluation Activity | Standard | Custom | SBDI | NC | RCx | BSS |
|---|---|---|---|---|---|---|
| **Gross Impact Analysis** | | | | | | |
| Database Review | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Desk Reviews | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| On-Site Verification | ✓ | ✓ | - | - | ✓ | - |
| **Attribution/Net Impact Analysis** | | | | | | |
| Free Ridership | ✓ | ✓ | ✓ | ✓ | - | - |
| Participant Spillover | ✓ | ✓ | ✓ | ✓ | - | - |
| Market Partner Spillover | ✓ | ✓ | - | - | - | - |

The following subsections provide a general description of each evaluation activity. Program-specific details are included in each program chapter, where relevant.

## Program Manager and Implementer Interviews

To support evaluation planning, we conducted in-person interviews with program implementation staff in January 2019. In these interviews, we explored details of the design and planned implementation for each program, as well as program staff's evaluation priorities.

The evaluation team conducted a second interview with the program implementation staff in January 2020. The goals of this interview were to understand the program team's perspective on program performance during PY2019, to assess program accomplishments and challenges, to clarify any outstanding questions about program design and implementation, and to gain an understanding of planned changes for PY2020.

## Program Material Review

We conducted a comprehensive review of available program materials, including program guidelines, marketing plans and activity summaries, application forms, and incentive brochures. This review served to familiarize the evaluation team with details of program design and implementation.

## Tracking System Review

In February 2019, the evaluation team conducted a review of LM Captures, the tracking database shared across all Ameren Missouri business programs. The goal of our review was to ensure the database contained the data necessary to accurately complete our evaluation, including key equipment characteristics (e.g., sizes and model numbers) to support the impact analysis, as well as critical customer contact data (e.g., name, address, phone number, and e-mail address) to support our survey efforts. We developed a memo summarizing our findings of the review and recommended the additional fields be tracked.[10]

## Participant Research

The participant research consisted of quantitative online surveys or qualitative telephone interviews conducted with Ameren Missouri business customers who had participated in one or more of the business programs during PY2019. The number of participants determined whether we used a survey or interview

[10] Memo titled *Program Tracking Data Review – Business Energy Efficiency Programs*, dated February 28, 2019.

approach: For programs with a large number of participants, we used surveys; for programs with few participants, we used interviews. The general topics covered across the business programs included:

- Customer experience with the program and market partners/Service Providers
- Sources of program information
- Drivers of and barriers to energy efficiency and program participation
- Satisfaction with the program overall and different program components
- Recommendations for program improvement
- Free ridership (FR) and participant spillover (PSO) for select programs

While initially planned, this evaluation did not include interviews with RCx participants due to the small number of participants. We therefore postponed this research to the PY2020 evaluation.

Details of the individual data collection activities, including population sizes, sampling approaches, and response rates, are presented in the individual program chapters. Final data collection instruments are provided under separate cover.

### Market Partner Research

The market partner research consisted of quantitative online surveys or qualitative telephone interviews conducted with market partners who had implemented one or more projects for an Ameren Missouri business customer in PY2019. The number of active market partners determined whether we used a survey or interview approach: For programs with a large number of market partners, we used surveys; for programs with few market partners, we used interviews. The general topics covered across the business programs included:

- Market partner experience with the program
- Influence of program on business practices
- Barriers to conducting more Ameren Missouri projects
- Satisfaction with the program overall and different program components
- Recommendation for program improvement

In addition to the above topics, a key topic of the market partner survey for the Standard and Custom programs was assessment of market partner spillover. While initially planned, this evaluation did not include interviews with RCx or NC market partners due to low participation. We therefore postponed this research to the PY2020 evaluation.

Details of the individual data collection activities, including population sizes, sampling approaches, and response rates, are presented in the individual program chapters. Final data collection instruments are provided under separate cover.

### Gross Impact Analysis

The PY2019 gross impact analyses for the Ameren Missouri business programs are based on engineering desk reviews and onsite visits for a sample of projects.

The gross impact analysis developed first and last year ex post gross energy and demand savings. The following should be noted:

- For lighting measures, ex post energy savings reflect a heating penalty for applicable lighting measures that were installed in electrically heated spaces.
- We applied deemed technology-specific coincidence factors (CF) from Ameren Missouri's TRM Revisions 3.0 to ex post energy savings to calculate ex post demand savings. For lighting measures, CFs are applied to ex post gross savings net of any heating penalty. As such, program-level ex post demand savings may not equal the product of ex post gross savings and the CF.
- Last year ex post demand savings are presented by three EUL categories: less than 10 years, 10-14 years, and 15 years or more.

### Database Review

We reviewed the program-tracking database to check that project data was recorded fully and correctly and that the database contained all needed information to reconstruct development of ex ante savings for deemed measures. We also examined the incented measures to ensure that they met all program requirements.

### Engineering Desk Reviews

We conducted engineering desk reviews for a sample of projects from each BizSavers program to verify information in the program-tracking database, including equipment types, efficiencies, quantities, hours of operation, and other information needed to estimate gross savings. For the sampled projects, we reviewed all available project documentation, including applications, invoices, and specification sheets. In some cases, we contacted project representatives to confirm information, including hours of use for lighting measures.

We determined the optimal sampling approach for each program based on the number, type, and size of projects completed in PY2019, targeting 10% relative precision at 90% confidence (90/10), where possible. Due to the small number of PY2019 projects, we reviewed all RCx and NC projects, i.e., a census. For the other BizSavers programs, we stratified by enduse (if relevant) and by project size. For the Standard and Custom programs, we developed our sample for engineering desk reviews (and onsite visits) in two waves, using the program-tracking database as a sample frame. For each wave, we selected a number of projects proportionate to the share of final program savings we projected the wave to represent.

### Onsite Verification

Onsite verification involved in-person visits to the site of measure installation, conducted for a subset of the projects which received an engineering desk review. Onsite visits provided additional rigor to the verification process by confirming that the incented measures are still installed and operational, and that the baseline conditions, equipment characteristics, and building characteristics are consistent with project documents and program implementer's assumptions.

We tailored the scope of each onsite visit to the specific project and the measure(s) installed at the site, based on an in-depth review of the site's project files. At a minimum, the engineer performed the following actions during the onsite visits:

- Verified that the incented measures are still installed and functioning, and that the quantity is consistent with the number of measures in the program-tracking database.

- Collected additional physical data to further analyze and determine the energy savings resulting from the incented measure(s).
  - For lighting measures, we verified the lighting control methods by area, operating hours, and characteristics of the building's HVAC equipment.
  - For non-lighting measures, we obtained historical operational data from site monitoring systems, including information on operating equipment and inputs to savings algorithms such as temperature, power, and pressure.
- Conducted interviews with facility staff to verify lighting hours of use, baseline building and equipment conditions, and to identify spare lighting stocking.

### Engineering Analysis

While initially planned, this evaluation did not include a comprehensive engineering analysis for the population of deemed measures incented in PY2019. This analysis would have calculated ex post savings, based on TRM algorithms, deemed savings assumptions, and any updated evaluation-estimated parameters (such as in-service rates) derived from desk reviews and/or participant survey data. However, the program-tracking database did not contain all necessary inputs into the algorithms for deemed measures, making it impossible for the evaluation team to replicate ex ante savings. As a result, we were unable to conduct a meaningful comparison of ex ante and ex post savings for the population of deemed measures, and our ex post analysis instead relied on extrapolating the results of the desk reviews and/or onsite visits to the population of deemed measures.

### Program-Level Gross Impacts

For each BizSavers program, we developed enduse and/or program-level realization rates for first year energy and demand savings. We developed these by aggregating the project-level results from the desk reviews and/or onsite visits, applying weights that reflect (1) the relative size of each project within the sample and (2) the probability of each project to be sampled. The enduse and/or program-level realization rates were then used to adjust the ex ante savings for the population of program projects.

## Attribution/Net Impact Analysis

Our NTG analysis included consideration of free ridership (FR), participant spillover (PSO), and market partner spillover (MPSO); it did not include consideration of non-participant spillover (NPSO). We developed estimates of FR and PSO based on the online surveys/interviews with participants and estimates of MPSO based on the online survey with market partners in the Standard and Custom programs. The NTGR was calculated as follows:

$$NTGR = 1 - FR + PSO + MPSO$$

It should be noted that this evaluation included estimation of all three NTGR components for only the Standard and Custom programs. The evaluations for SBDI and NC did not include estimation of MPSO (mostly due to program size). While initially planned, this evaluation did not include a FR or PSO analysis for the RCx Program, due to very low program participation in PY2019 (N=4). Instead, we applied the NTGR of 1.0 from the PY2018 program evaluation. For the BSS Program, since it falls under the umbrella of low-income programs, we applied a default NTGR of 1.0, assuming that both free ridership and spillover are zero.

Table 2-2 summarizes, by program, which NTGR components were estimated as part of the PY2019 evaluation. The subsections following the table provide more detail on the estimation of FR, PSO, and MPSO.

Table 2-2. Components of NTGR by Program

| NTGR Component | Standard | Custom | SBDI | NC | RCx | BSS |
|---|---|---|---|---|---|---|
| Free Ridership | ✓ | ✓ | ✓ | ✓ | - | - |
| Participant Spillover | ✓ | ✓ | ✓ | ✓ | - | - |
| Market Partner Spillover | ✓ | ✓ | - | - | - | - |

## Free Ridership

Free riders are program participants who would have completed the same energy efficiency upgrade without the program. FR scores represent the percentage of savings that would have been achieved in the absence of the program. FR scores can range from 0% (not a free rider; the participant would not have completed the project without the program) to 100% (a full free rider; the participant would have completed the project without the program). FR scores between 0% and 100% represent partial free riders, i.e., participants who were to some degree influenced by the program to complete the energy efficiency upgrade.

FR survey questions focused on the program's influence on the level of efficiency, the quantity of installed measures, and the timing of the installations.[11] For each respondent, FR is calculated as follows:

*FR = Efficiency FR Score * Timing & Quantity Adjustment*

The Efficiency FR Score consists of two measurements: The first is based on the importance of various program factors on the respondent's decision to install energy-efficient equipment; the second is based on two measurements of what the respondent would have done in the absence of the program (i.e., the counterfactual).[12] The survey embedded consistency checks in case inconsistent responses were given, and provided the respondent with an opportunity to revise their initial responses and/or provide additional context.

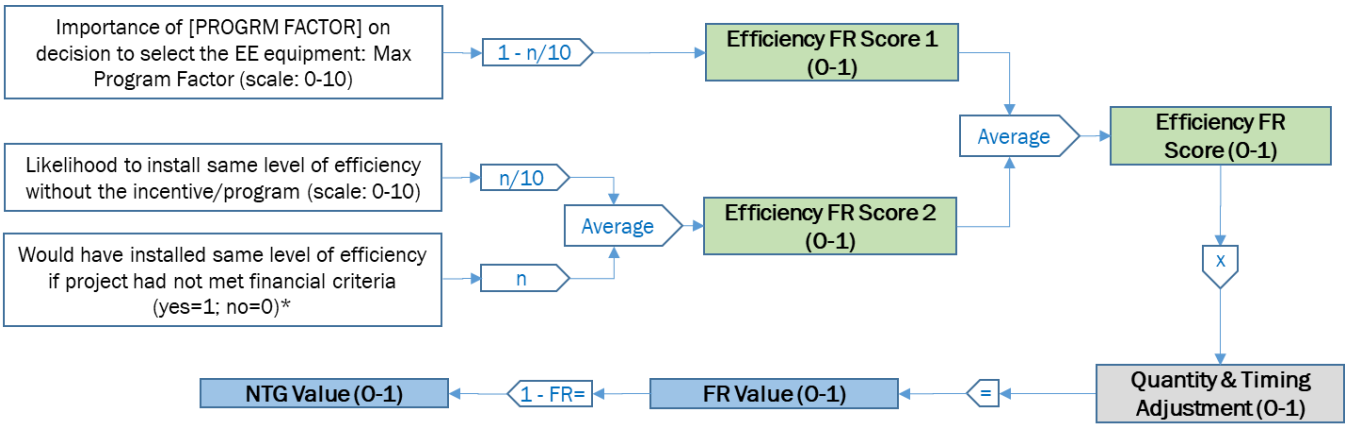
We used responses about the program's influence on measure quantity and project timing to adjust the Efficiency FR Score, allowing the program to receive credit in cases where the program influenced project size and timing rather than, or in addition to, the level of efficiency of the installed equipment.

Figure 2-2 presents a diagram of the respondent-level FR algorithm used for this evaluation.

[11] The FR algorithm for the NC Program did not include program influence on quantity and timing, since this is generally not applicable to new construction projects.

[12] Note that the original methodology included only one measurement of the counterfactual. After review of the first wave of survey responses for the Standard and Custom programs, a few additional questions were added to the second wave and incorporated into the algorithm. For respondents to Wave 1 of the Standard/Custom survey, we extrapolated the second measurement by applying a program-specific adjustment factor, developed based on Wave 2 responses.

Figure 2-1. Overview of Free Ridership Algorithm




**Asked of those who rated importance of financial criteria >7 and indicated that the incentive caused the project to meet their financial criteria*

We developed FR estimates, by program, as follows:

- We first developed a FR estimate for each survey respondent, using the algorithm depicted above.
- We then aggregated respondent-level FR estimates to the stratum level, weighting the sampled projects within each stratum by their ex post gross savings. In cases of low numbers of responses within an analysis group, we combined two or more of the size strata.
- For each program, we developed a FR value by applying ex post savings weights to reflect the relative contribution of each stratum to the program's overall savings.

Additional detail on the free ridership methodology used in the evaluation of the BizSavers programs is presented in Appendix A.

### Participant Spillover

PSO refers to additional energy efficiency upgrades participants made at the time of or after their participation in the BizSavers program that were influenced by the program but for which they did not receive a program incentive. We developed separate PSO estimate for the Standard, Custom, SBDI, and NC programs. PSO is expressed as a percentage of program savings.

To determine if a survey respondent is eligible for PSO savings, we asked a series of questions about additional energy efficiency installations that they made without receiving an incentive and the degree to which the program influenced their decision to install the efficient equipment. The survey included two program influence questions:

*Q1. How much did your experience with the BizSavers Program or interactions with Ameren Missouri staff influence your decision to make these additional efficiency improvements without an incentive?*

This question was asked on a scale of 0 to 10, where 0 means "No Influence" and 10 means "Greatly Influenced."

*Q2. If you had NOT participated in the BizSavers Program, how likely is it that <COMPANY> would still have made the additional energy efficient improvements?*

This question was asked on a scale of 0 to 10, where 0 means "Definitely would not have made improvements" and 10 means "Definitely would have made improvements."

To supplement these numeric responses, we asked open-ended questions about how the program influenced the decision to make the energy efficiency installations and why the participant made the installations without a program incentive. A respondent's additional energy efficiency installations were deemed eligible for PSO if two conditions were met: (1) the Program Influence Factor (see below) was greater than 5.0 and (2) the open-ended responses did not contradict that the installations were eligible for PSO.

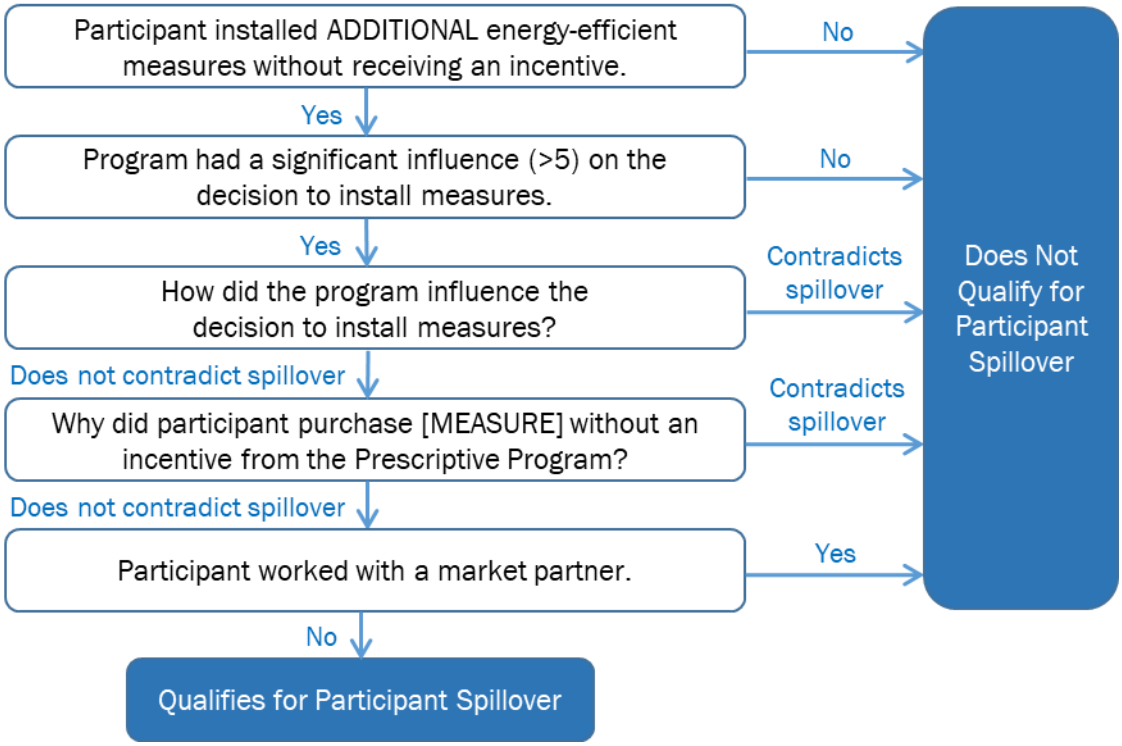
The Program Influence Factor was calculated as follows:

$$\textit{Program Influence Factor} = (\textit{Q1 Response} + (10 - \textit{Q2 Response})) \div 2$$

In addition, we applied a third PSO eligibility condition: that the participant did not work with a participating market partner. This condition was necessary because this evaluation also estimated MPSO. When estimating spillover (SO) from multiple sources, it is important to avoid double-counting. In the case of this evaluation, double-counting could occur if participants and market partners report SO from the same projects. We avoided such double-counting by determining if the participant's SO project was completed by a market partner who is in the sample frame for the market partner survey (i.e., the market partner completed at least one project through the program during PY2019). If so, the SO reported by the participant was excluded from the PSO estimate as it was captured through the MPSO analysis (see next subsection).

Figure 2-2 presents a diagram of the PSO eligibility determination methodology used for this evaluation.

Figure 2-2. Participant Eligibility for Spillover - Methodology



The survey also included a few follow-up questions about SO-eligible measures, including the type of equipment and, for lighting measures only, information on the quantity of measures installed, whether they were installed in a conditioned space, and the type of lighting they replaced.

For participants with qualifying installations, we conducted follow-up interviews to collect more-detailed information for each additional measure, such as baseline and efficient wattages or the age of the equipment. We then used TRM engineering algorithms to develop SO savings for each measure. We then developed a "PSO Rate," by program, which is calculated using the following formula:

$$PSO\ Rate = \frac{SO\ in\ Sample}{Ex\ Post\ Gross\ Impacts\ in\ Sample}$$

### Market Partner Spillover

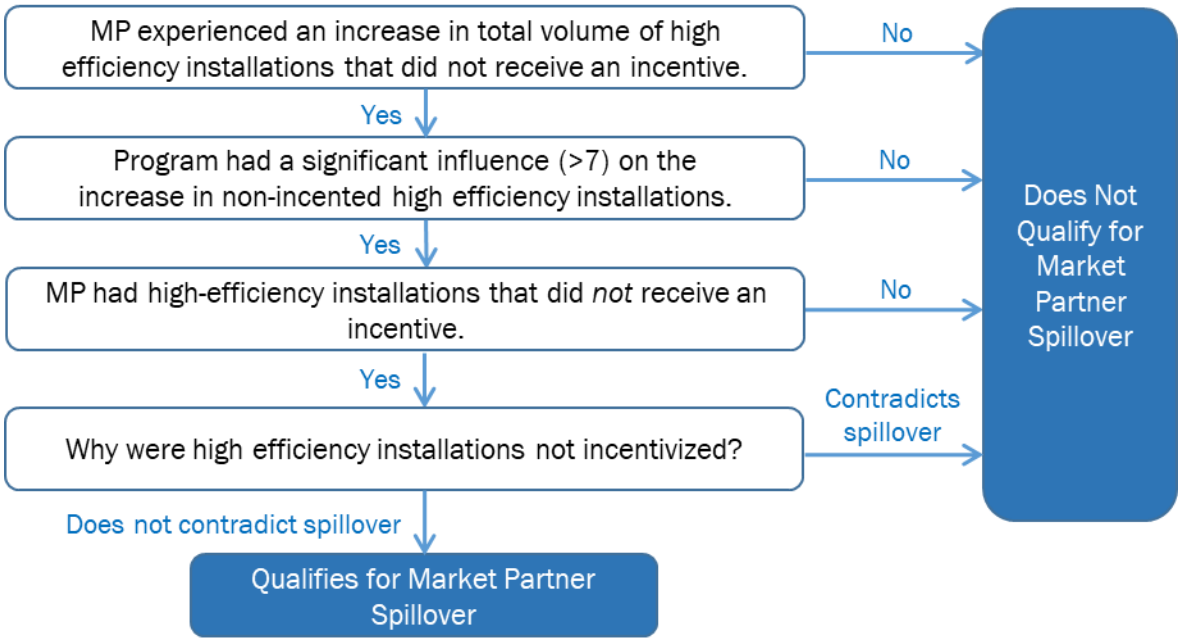
MPSO refers to non-incented energy efficiency upgrades made by customers who were influenced by a market partner who was in turn influenced by the BizSavers programs. We developed a combined estimate of MPSO for the Standard and Custom programs. MPSO is expressed as a percentage of program savings.

To determine if a market partner was eligible for SO savings, the online survey asked a series of SO-related questions. We considered a market partner for SO if the following conditions were met:

- Since participating in the BizSavers programs, the market partner's total volume of high-efficiency installations that did not receive an incentive increased.
- The market partner rated the importance of the BizSavers programs on this increase an 8, 9, or 10 (on a scale of 0 to 10).
- The market partner reported having installed at least some high-efficiency equipment without an incentive from the BizSavers programs during the evaluation period.
- The market partner's open-ended response about why customers with high-efficiency installations did not receive an incentive from the program did not contradict that non-incented, high-efficiency installations qualified as SO.

Figure 2-3 presents a diagram of the MPSO eligibility determination methodology used for this evaluation.

Figure 2-3. Trade Ally Eligibility for Spillover - Methodology




For each respondent who met these qualifying conditions, we determined SO savings from the non-incented, high-efficiency installations through:

- Survey questions about:
  - The respective shares of the market partner 's total high-efficiency installations in PY2019 that did and did not receive a program incentive;
  - The share of high-efficiency installations without an incentive that were strongly influenced by program activity in 2019; and
  - The size of non-incented, high-efficiency installations relative to those that did receive an incentive (resulting in a "Size Adjustment" factor), if applicable
- Program-tracking data on the savings associated with the Standard and Custom Program projects for that respondent.

For respondents who met the qualifying conditions outlined above, SO savings were considered to be equal to a portion of the savings of their non-incented, high-efficiency installations. SO for each qualifying trade ally respondent (i) is calculated using the following equation.

$$MPSO\ Respondent_i = \left( \frac{Savings\ from\ Program\ Database_i}{\%\ Efficient\ Installations\ that\ Received\ Incentive_i} - Savings\ from\ Program\ Database_i \right) * \%\ Influenced\ by\ Program_i * Size\ Adjustment_i$$

To extrapolate savings to the program, we developed a "Respondent SO Rate" by dividing the sum of the estimated SO savings by total program savings associated with all survey respondents. We then applied this Respondent SO Rate to Standard and Custom program savings associated with all market partners (including those who did not respond to the survey) to derive the overall SO estimate (in MWh). Finally, we estimated the

"Program MPSO Rate" by dividing the overall SO estimate (in MWh) by total program ex post savings (in MWh). This final step is necessary to normalize the SO rate to the entire Standard and Custom programs, taking into account that some customers complete projects without a market partner.

A more detailed description of the MPSO algorithm can be found in Appendix A.

### Net Impacts

The final step in the net impact analysis was application, by program, of the NTGRs resulting from the FR, PSO, and MPSO analyses to ex post gross savings using the following formula:

Ex post net savings = Ex post gross savings * NTGR

# 3. Standard and Custom Incentive Programs

This chapter summarizes the PY2019 evaluation methodology and results for the Standard and Custom Incentive Programs. While the Standard and Custom programs are two distinct programs within the BizSavers portfolio, we combine discussion of evaluation methodologies and results in one chapter due to considerable overlap in program design and implementation, customer and market partner participation, and evaluation activities. Where relevant and possible, we provide separate results for the two programs.

Additional details on the evaluation methodology are presented in Chapter 0 and Appendix A. Appendix B and Appendix C include detailed desk review and onsite visit findings for the Standard and Custom Programs, respectively.

## 3.1 Evaluation Summary

The Standard Incentive Program and the Custom Incentive Program are the two largest programs in Ameren Missouri's PY2019 business portfolio. Within the BizSavers portfolio, the Standard Incentive Program accounts for 73% and 56% of first year ex post net energy and demand savings, respectively, while the Custom Incentive Program accounts for 17% and 34% of first year ex post net energy and demand savings, respectively.

The Standard and Custom programs are designed to promote energy awareness and installation of energy-efficient technologies or services by providing incentives to offset the higher cost associated with completing these projects. The Standard Incentive Program encourages customer participation through simple and streamlined program processes and focuses on technologies that include lighting, motors, controls, HVAC, and refrigeration. The Custom Incentive Program applies to processes, technologies, and energy efficiency measures that do not fall within the other pre-defined programs. These projects are sometimes complex and always unique, requiring customer-specific incentive applications and calculations of estimated energy savings.

Whereas measures offered through the Standard Program are mostly prescriptive and receive set incentive amounts per unit, incentive levels for the Custom Program are calculated based on energy savings estimates for each proposed measure. Onsite visits are required for projects with incentives exceeding $15,000 to verify baseline data, energy savings estimates, and post-installation measuring capabilities.

In PY2019, the only participation channel was application-based and supported by a network of registered trade allies and other, non-registered market partners (including contractors, distributors, wholesale retailers, and, where applicable, local economic development and professional associations).

The target market for the Standard and Custom programs includes commercial, industrial, and institutional customers and excludes multifamily and low-income customers, who are served by the residential programs. To more effectively penetrate the Ameren Missouri markets, the programs utilized a targeted marketing approach, focusing on customer types (e.g., grocers, hospitals, lodging, municipalities, state and federal government, utilities, education, agriculture, restaurants, and retail chains, etc.) to increase customer interest and drive installations.

The PY2019 Standard and Custom programs are both ongoing programs from the previous MEEIA cycle, and their implementation has remained largely unchanged from previous years. Notable changes compared to PY2018 include additional measures being offered through the Standard Program, including additional HVAC measures (split system DX units, advanced rooftop unit controls, and demand control ventilation), compressed

air measures, and ECMs for refrigeration. The other key change for PY2019 was the implementation of a 10% completion bonus designed to increase participation rates. The bonus went into effect on July 19, 2019 and was available to all BizSavers projects (with appropriate paperwork submitted by December 20, 2019).

### 3.1.1 Participation Summary

Table 3-1 presents PY2019 participation in the Standard and Custom programs, including the number of projects and ex ante gross savings. Overall, Ameren Missouri business customers implemented 1,699 projects through the Standard Program and 197 through the Custom Program in PY20109, resulting in 76,553 and 16,807 MWh of ex ante gross energy savings. In PY2019, the Standard Program was heavily focused on lighting projects (96% of projects and 98% of ex ante gross energy savings. In contrast, the Custom Program derived the majority of its savings from HVAC measures (71%) even though 57% of projects included lighting.

Table 3-1. PY2019 Standard and Custom Program Participation Summary

| Enduse | Projects [A] | | Ex Ante Gross Savings | |
|---|---|---|---|---|
| | Number | % | MWh | % |
| **Standard Incentive Program** | | | | |
| Lighting | 1,629 | 96% | 74,663 | 98% |
| Motors | 36 | 2% | 1,460 | 2% |
| HVAC | 45 | 3% | 318 | <1% |
| Refrigeration | 8 | <1% | 52 | <1% |
| Water Heating | 1 | <1% | 42 | <1% |
| Cooking | 2 | <1% | 18 | <1% |
| **Total Standard** | **1,699** | **100%** | **76,553** | **100%** |
| **Custom Incentive Program** | | | | |
| HVAC | 61 | 31% | 11,857 | 71% |
| Compressed Air | 13 | 7% | 2,520 | 15% |
| Lighting | 112 | 57% | 2,024 | 12% |
| Refrigeration | 8 | 4% | 173 | 1% |
| Motors | 2 | 1% | 129 | 1% |
| Building Shell | 3 | 2% | 87 | 1% |
| Water Heating | 1 | 1% | 16 | <1% |
| **Total Custom** | **197** | **100%** | **16,807** | **100%** |

[A] *Totals for each program sum to more than 100% due to projects containing more than one enduse*

### 3.1.2 Key Impact Results

#### Standard Program

The Standard Program was the largest program in Ameren Missouri's Business Portfolio in PY2019, contributing 73% of first year ex post net energy savings and 56% of first year ex post net demand savings. Table 3-2 summarizes first year and last year annual gross and net savings for the Standard Program in PY2019. As shown, the program achieved 207% and 198%, respectively, of Ameren Missouri's first year net energy and demand savings goals, and 126% and 306%, respectively, of Ameren Missouri's last year net demand savings targets in the 10-14 Year EUL and 15+ Year EUL categories.

Table 3-2. PY2019 Standard Savings Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| **First Year Savings** | | | | | | | |
| Energy Savings (MWh) | 76,553 | 94.0% | 71,972 | 84.2% | 60,622 | 29,220 | 207% |
| Demand Savings (MW) | 14.69 | 97.7% | 14.36 | 84.2% | 12.10 | 6.10 | 198% |
| **Last Year Demand Savings** | | | | | | | |
| < 10 EUL (MW) | - | n/a | - | n/a | - | 0.55 | 0% |
| 10-14 EUL (MW) | 4.28 | 94.4% | 4.04 | 84.2% | 3.40 | 2.70 | 126% |
| 15+ EUL (MW) | 10.41 | 99.1% | 10.32 | 84.2% | 8.69 | 2.84 | 306% |

The PY2019 Standard Program achieved program-level gross realization rates between 94% and 99% for first year and last year savings. As lighting projects account for nearly all PY2019 Standard Program savings, these results were driven by the following differences in ex ante and ex post assumptions for lighting measures:

- The ex post analysis updated lighting hours of use (HOU) based on verification through project document review and facility staff interviews.
- Ex post energy and demand savings include project-specific waste heat factors (WHFs) and heating penalty interactive factors (IF) based on project building types, in alignment with the Ameren Missouri TRM. In contrast, ex ante calculations assume a fixed heating and cooling interaction factor (HCIF) of 1.07 for all interior lighting measures.
- The evaluation team adjusted values for removed and installed lighting measure quantities and wattages through field verification and desk reviews of project documents and manufacturer specifications.

The NTGR for the Standard Program was 84%, including consideration of free ridership (17%), participant spillover (0.4%), and market partner spillover (0.9%).

## Custom Program

The Custom Program was the second largest program in Ameren Missouri's Business Portfolio in PY2019, contributing 17% of first year ex post net energy savings and 34% of first year ex post net demand savings. Table 3-3 summarizes first year and last year annual gross and net savings for the Custom Program in PY2019. As shown, the program achieved 42% and 74%, respectively, of Ameren Missouri's first year net energy and demand savings goals, and 99% and 70%, respectively, of Ameren Missouri's last year net demand savings targets in the 10-14 Year EUL and 15+ Year EUL categories.

Table 3-3. PY2019 Custom Savings Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Target |
|---|---|---|---|---|---|---|---|
| **First Year Savings** | | | | | | | |
| Energy Savings (MWh) | 16,807 | 97.7% | 16,427 | 87.9% | 14,441 | 34,247 | 42% |
| Demand Savings (MW) | 8.71 | 95.7% | 8.34 | 87.9% | 7.33 | 9.89 | 74% |
| **Last Year Demand Savings** | | | | | | | |
| < 10 EUL (MW) | - | n/a | - | n/a | - | - | n/a |
| 10-14 EUL (MW) | 1.58 | 97.7% | 1.55 | 87.9% | 1.36 | 1.38 | 99% |
| 15+ Year EUL (MW) | 7.12 | 95.3% | 6.79 | 87.9% | 5.97 | 8.51 | 70% |

The PY2019 Custom Program achieved high gross realization rates for both first and last year energy and demand savings, ranging from 95% to 98%. Since HVAC projects accounted for 71% of PY2019 Custom Program savings, overall results are primarily influenced by adjustments made to HVAC measures in the ex post calculations.

The NTGR for the Custom Program was 88%, including consideration of free ridership (13%), participant spillover (0%), and market partner spillover (0.9%).

### 3.1.3 Key Process Findings

The following summarizes the evaluation team's key findings from the evaluation by thematic topic. Details supporting each finding are provided in Section 3.3.1.

- **Program Participation**: In PY2019, Ameren Missouri business customers completed 1,699 projects through the Standard Program and 197 through the Custom Program. The number and size of Standard and Custom projects increased substantially toward the end of the program year, reflecting the lack of a pipeline at the beginning of the program year, longer project development times for bigger and more complex projects, and the likely effect of the incentive bonus expiring on December 20.

- **Sources of Program Information**: BizSavers trade allies and market partners are essential sources of program information for both Standard and Custom participants; 77% of Standard participants and 83% of Custom participants reported they had first learned about the program through a contractor, vendor, or energy consultant. However, more than one-third (35%) of all respondents indicated that Ameren Missouri should send an email blast or electronic newsletter to inform their companies of energy saving opportunities.

- **Application Process**: In most cases, the BizSavers application process is collaborative, and most participants have the assistance of a contractor or vendor when filling out the application (89% of Standard participants and 96% of Custom participants). The application process is also generally straightforward, as only about one in three participants (31%) were required to resubmit or provide additional documentation. All Custom projects and certain Standard measures require an additional pre-approval process, which 85% of market partners believe to be somewhat or very easy.

- **Barriers to Participation**: The main customer barriers to implementing energy efficiency upgrades are economic -- the higher cost of energy efficient equipment and lack of access to financing or capital for energy saving improvements. Similarly, lack of knowledge of incentives and incentive rates are the main program barriers to conducting more BizSavers projects.

- **Participant Satisfaction**: Overall, BizSavers participants are satisfied with the program, with 78% of Standard participants and 91% of Custom participants being "Very Satisfied" with the program overall. Participants in both the Standard and Custom programs are also generally satisfied with various program components, notably interactions with BizSavers program representatives (Standard 91%, Custom 92% "very satisfied"), and the installed equipment (Standard 89%, Custom 91% "very satisfied"). No program component was rated less than 55% "very satisfied."

- **Ameren Missouri Website**: More than half of all participants (54%) visited the Ameren Missouri Website in the past 12 months and nearly all (85%) were able to find the information they needed easily. The most common reasons for visiting the website were to look for information on energy efficiency incentives or find the BizSavers application or related documents.

- **Educational Materials**: Among the customers who consulted with a contractor or vendor before selecting their equipment, 83% of Standard participants and 76% of Custom participants received information about the equipment or its potential energy bill savings from the contractor or vendor.

- **Trade Ally Participation**: Registered trade allies represent about half of all PY2019 market partners but completed 85% of Standard and 79% of Custom projects. More than half of surveyed trade allies reported they had been a trade ally since 2015 or earlier, and more than two-thirds (69%) reported they became trade allies to better serve their customers. Trade allies were generally aware of the various benefits offered to them and provided high importance ratings for all of them.

- **Market Partner Satisfaction**: Market partners are largely satisfied with Ameren Missouri and the BizSavers Program overall (67% and 55% "very satisfied", respectively). Market partners are also satisfied with their communications with Ameren Missouri (72% "very satisfied"), but they reported lower levels of satisfaction with the incentive levels (32% "very satisfied") and lead generation from the Ameren Missouri website (31% "very satisfied").

- **Recommendations for Program Improvement**: Surveyed participants and market partners were provided opportunities to recommend improvements to the program. Participants suggested that Ameren Missouri increase or add incentives for more products and to increase awareness of the program. Market partners also suggested adding incentive for more products, specifically outdoor lighting equipment.

### 3.1.4 Conclusions and Recommendations

Based on the results of this evaluation, the evaluation team offers the following conclusions and recommendations for the Standard and Custom programs moving forward:

- **Conclusion #1:** Overall, it appears the Standard and Custom programs have run smoothly and effectively throughout PY2019. Participants are generally very satisfied with the program and the program seems to be meeting their needs and expectations. The Standard Program achieved 207% of the annual first energy savings goal and 198% of the first year demand savings goal, while the Custom Program only achieved 42% of its energy savings goal and 74% of its demand savings goals.
  - **Recommendation:** Continue offering and running the programs as is. While some additional potential may exist with the Custom Program, the Standard Program really drives savings as it accounts for 73% of ex post net energy savings within the business portfolio.

- **Conclusion #2:** When given the opportunity, neither participants nor market partners provided many recommendations for program improvements. However, the fact that the BizSavers programs do not

currently offer prescriptive outdoor lighting was a recurring theme across all of our process evaluations.

  - **Recommendation:** Continue to expand the slate of program-eligible measures. Outdoor lighting is the only one that arose as a specific recommendation, but others likely offer potential.

- **Conclusion #3:** While awareness of the incentive bonus was mixed among recipients, 21% of Standard participants who received a bonus believed that the project would not have been completed before January 1, 2020 without the bonus. Although the full effect of the incentive bonus is unclear, it is apparent that at least some participants changed the timing and size of their project due to the bonus.

  - **Recommendation:** While offering additional bonuses can help stimulate some changes in customer behavior, the bonuses may need to be of higher value to really drive much of a response. They may also need to be offered with an earlier end-date to fully capture their potential and help smooth out participation over the program year and avoid a large influx of last-minute projects. Finally, a bonus can be a powerful tool to drive participation in under-utilized components of the program, e.g., non-lighting measures, or within under-served populations.

- **Conclusion #4**: To estimate ex ante savings, the program implementer applies deemed values from Ameren Missouri TRM Appendix F for non-lighting measures.

  - **Recommendation:** Leverage building and measure specific information for the use of Ameren Missouri TRM Appendix H assumptions and algorithms to calculate savings with actual inputs where available and applicable. This approach will allow for a more accurate estimation of savings as site-specific information is used instead of averages from historical program participants, as reflected in Appendix F deemed values.

- **Conclusion #5:** The PY2019 Standard Program was heavily dominated by lighting measures. While these offer a cost-effective way of achieving savings targets, changing market conditions will necessitate a shift of program activity towards other enduses, if program savings are to be sustained over the longer term.

  - **Recommendation:** Continue to harvest lighting savings, while available, but begin increased promotion of other enduses among trade allies and customers to facilitate the transition away from lighting as the LED market matures.

## 3.2 Standard and Custom Evaluation Methodology

Table 3-4 provides an overview of the PY2019 evaluation activities for the Standard and Custom programs. Most of these activities are similar across the various business programs and were described in Chapter 0. The sections following the table highlight program-specific aspects of key evaluation activities.

Table 3-4. PY2019 Evaluation Activities for the Standard and Custom Incentive Programs

| Evaluation Activity | Description |
|---|---|
| Program Manager and Implementer Interviews | ▪ Conducted interviews (1) before program launch to inform evaluation planning and (2) towards the end of PY2019 to understand program staff's perspective on program performance. |
| Program Material Review | ▪ Reviewed program materials to inform evaluation activities. |
| Tracking System Review | ▪ Reviewed implementer's tracking system to ensure that data required for the evaluation was being collected. |

| Evaluation Activity | Description |
|---|---|
| Participant Survey | ▪ Conducted two waves of survey with program participants to collect data to inform NTG (free ridership and participant spillover) and yield process-related insights. |
| Market Partner Survey | ▪ Collected data to inform NTG (market partner spillover) and yield process-related insights. |
| Engineering Database Review | ▪ Reviewed program database to check that program data were complete and that program-installed measures met all program requirements. |
| Engineering Desk Reviews & Onsite Verification | ▪ Reviewed supporting project documentation for a sample of projects to ensure that original data was correctly entered from invoices and other documentation.<br>▪ Performed onsite verification visits for a sample of projects to confirm quantity and continued operation of incented measures, collected additional data to develop energy savings, and verified other parameters through staff interviews.<br>▪ Developed ex post savings for the sample and the population. |
| NTGR/Net Impact Analysis | ▪ Developed estimates of free ridership, participant spillover, and market partner spillover.<br>▪ Estimated PY2019 net impacts. |

## Participant Survey

We conducted a quantitative online survey with Ameren Missouri business customers who participated in the Standard and Custom programs during PY2019. A combined survey was fielded in two waves: in October/November 2019 and in January 2020. The survey covered a range of topics, including sources of program information, the application process, educational materials, barriers to energy efficiency and participation in the program, participant satisfaction, and free ridership and participant spillover.

The survey sample was designed to allow for the development of separate FR estimates for the Standard and Custom programs. For the Standard Program, we stratified the sample of projects by lighting and non-lighting and, within each enduse group, by project size. For the Custom Program, we stratified by project size only. While the sampling unit for this survey was the unique customer contact, the FR questions had to be asked about a specific project completed by that customer. Because many customers had completed more than one project during PY2019, often across more than one BizSavers program, our sampling approach prioritized projects in programs and strata with fewer available sample points, i.e., Custom projects, projects with larger savings, and non-lighting projects.

Across the two waves, the sample frame included 1,169 unique participants. We invited all 1,169 program participants to participate in the survey via email (i.e., we attempted a census), sending an initial invitation and two reminders. The initial invitation resulted in 60 bounced emails. We removed these email addresses from the sample frame to give us a total of 1,109 valid sample points. Overall, 186 participants completed the survey (163 Standard Program participants and 23 Custom Program participants), resulting in a response rate of 17%.

To assess potential response bias and the need for weighting, the evaluation team compared key information available for both the sample and the population (i.e., the types of incented equipment and project size). Based on this analysis, we determined that weighting the survey results was not needed to make them more representative of the population.

## Market Partner Survey

In January 2020, we conducted a quantitative online survey with Ameren Missouri market partners who participated in either the Standard Incentive Program or the Custom Incentive Program during PY2019. The survey collected data to support the market partner spillover analysis and provide process-related and market-level insights.

As of the time of survey sampling, a total of 217 unique market partners had participated in either the Standard Program or the Custom Program. Of these, we removed 41 due to missing email addresses. We also removed 14 market partners who participated in other BizSavers programs during PY2019 and were included in the evaluation efforts for those programs (9 SBDI and 5 BSS). The resulting sample frame included 162 market partners. We invited all 162 market partners to participate in the survey via email (i.e., we attempted a census), sending an initial invitation and two reminders. The initial invitation resulted in 3 bounced emails. We removed these email addresses from the sample frame to give us a total of 159 valid sample points. A total of 67 market partners completed the survey, resulting in a response rate of 43%.

## Engineering Desk Reviews and Onsite Verification

We conducted engineering desk reviews for a sample of 91 Standard and 31 Custom projects to review and verify savings assumptions. The main purpose of the desk reviews was to verify that the program-tracking database correctly reflected the installed measure(s), including equipment types, efficiencies, quantities, hours of operation, and other information needed to estimate gross savings using TRM-based algorithms. For Custom Program projects and larger, more comprehensive Standard Program projects, i.e., projects with increased interactive effects between installed measures, the evaluation team developed project-specific calculations or energy models as a more accurate method of quantifying energy savings.

We also conducted onsite visits for a subset of 44 Standard Program projects and all 31 Custom projects. Onsite visits provided additional rigor to the verification process by confirming that the incented measures were still installed and operational, and that the baseline conditions, equipment characteristics, and building characteristics were consistent with project documents and program implementer's assumptions.

The evaluation team conducted desk reviews and onsite visits for Standard and Custom projects in two waves. The first wave included projects completed through August 31, 2019; the second wave included projects completed through October 31, 2019.

Table 3-5 summarizes the sampling strategy for the desk reviews and onsite visits for the Standard and Custom programs.

Table 3-5. Standard and Custom Gross Impact Sampling Summary

| Enduse | Number of Projects [A] | | |
|---|---|---|---|
| | Population | Desk Reviews | Onsite Visits |
| **Standard Incentive Program** | | | |
| Lighting | 1,629 | 81 | 39 |
| *Stratum 1* | *1,387* | *25* | *12* |
| *Stratum 2* | *193* | *30* | *15* |
| *Stratum 3* | *49* | *26* | *12* |
| Non-Lighting | 92 | 10 | 5 |
| *Stratum 1* | *83* | *4* | *1* |

| Enduse | Number of Projects [A] | | |
|---|---|---|---|
| | Population | Desk Reviews | Onsite Visits |
| *Stratum 2* | *5* | *4* | *2* |
| *Stratum 3* | *4* | *2* | *2* |
| **Total Standard Program** | **1,699** | **91** | **44** |
| **Custom Incentive Program** | | | |
| Lighting | 112 | 8 | 8 |
| *Stratum 1* | *94* | *4* | *4* |
| *Stratum 2* | *12* | *2* | *2* |
| *Stratum 3* | *6* | *2* | *2* |
| HVAC | 61 | 14 | 14 |
| *Stratum 1* | *49* | *11* | *11* |
| *Stratum 2* | *8* | *2* | *2* |
| *Stratum 3* | *4* | *1* | *1* |
| Compressed Air | 13 | 5 | 5 |
| All Others | 14 | 4 | 4 |
| **Total Custom Program** | **197** | **31** | **31** |

[A] For sampling purposes, projects are defined by project numeral and enduse.

## NTGR Analysis

The net-to-gross (NTG) analysis for the Standard and Custom programs included consideration of free ridership (FR), participant spillover (PSO), and market partner spillover (MPSO). FR and PSO are based on the participant survey, while MPSO is based on the market partner survey. The NTGR was calculated as follows:

$$NTGR = 1 - FR + PSO + MPSO$$

- **Free riders** are program participants who would have purchased the same measure(s) at the same time without any program influence. The participant survey collected information about the program's influence on (1) the efficiency of the installed equipment, (2) the quantity of installed equipment (where applicable), and (3) the timing of the installation. Free ridership was estimated separately for the Standard Program and the Custom Program.

- **PSO** refers to additional energy efficiency upgrades participants made concurrent with or following their BizSavers program participation that were influenced by the program but for which they did not receive a program incentive. We developed separate PSO estimates for the Standard and Custom programs. PSO is expressed as a percentage of program savings.

- **MPSO** refers to non-incented energy efficiency upgrades made by customers who were influenced by a participating market partner who was in turn influenced by their participation in the BizSavers Program. We developed a combined MPSO estimate for the Standard and Custom programs. MPSO is expressed as a percentage of program savings.

Additional detail on NTG methodologies is provided in Chapter 0 as well as Appendix A.

# 3.3 Evaluation Results

## 3.3.1 Process Results

### Program Participation

During PY2019, Ameren Missouri business customers implemented 1,699 projects through the Standard Program and 197 projects through the Custom Program. More than half (58%) of interviewed participants indicated being a repeat participant, i.e., their company had received incentives from Ameren Missouri's BizSavers Program in prior program years. Previous participation is significantly more common among Custom Program participants (79%) compared to Standard Program participants (56%).

Project starts for Standard projects were relatively steady over the 10-month program year (see Figure 3-1), averaging 170 per month. Starts for Custom projects, however, showed a decrease over time (see Figure 3-2), reflecting the fact that these projects generally take longer to complete, i.e., some projects that were started in the final months of PY2019 will be completed in PY2020.

In contrast, project completions for both programs increased steadily over the course of the program year and showed a significant uptick in November and December. The somewhat slow ramp-up at the beginning of the program year is not surprising, given that PY2019 was the first year in the current MEEIA cycle and the implementation team was not able to carry over a pipeline of projects from prior program years. Concurrent with the number of projects, both programs also achieved a significant share of their ex ante savings during the final two months of the program year (48% Standard; 68% Custom). Interestingly, not only did the number of projects increase substantially towards the end of the program year, so did the average project size: December Standard and Custom projects were 192% and 235%, respectively, of the mean project size of the other months (in kWh). This large uptick in project counts and sizes suggests that participants may have needed the full program year to complete the largest (and likely most complex) projects and that participants may have wanted to complete the projects during PY2019 to take advantage of the BizSavers' incentive bonus.

Figure 3-1. PY2019 Standard Program Monthly Project Starts and Completions

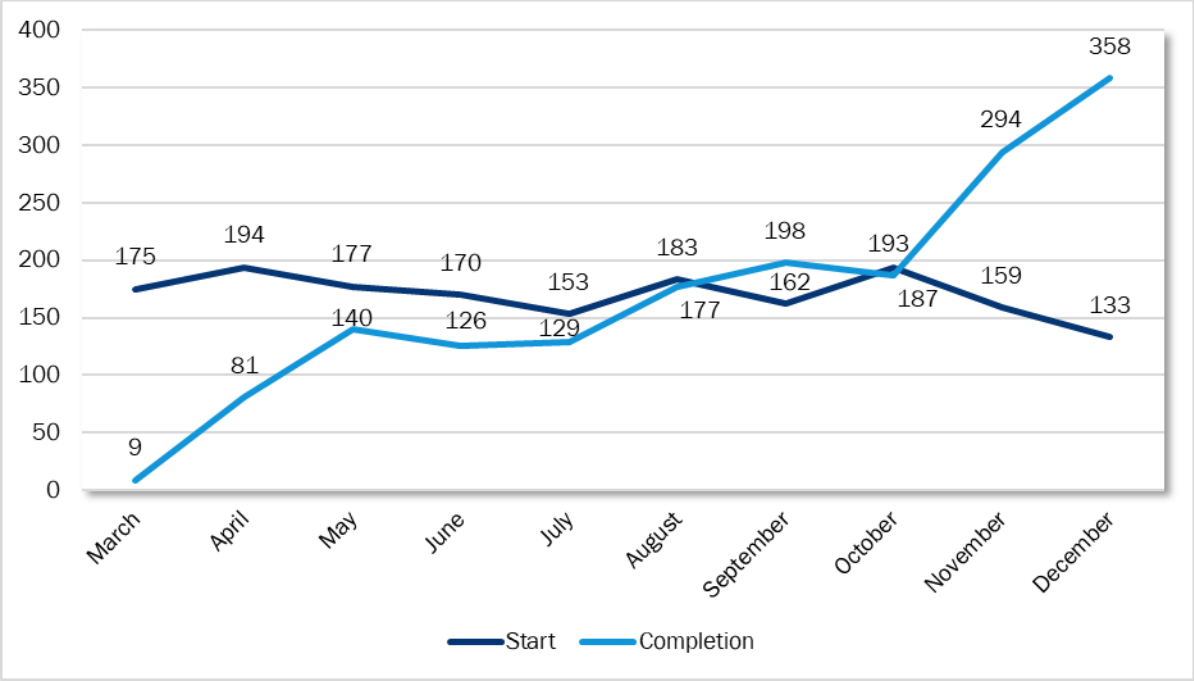
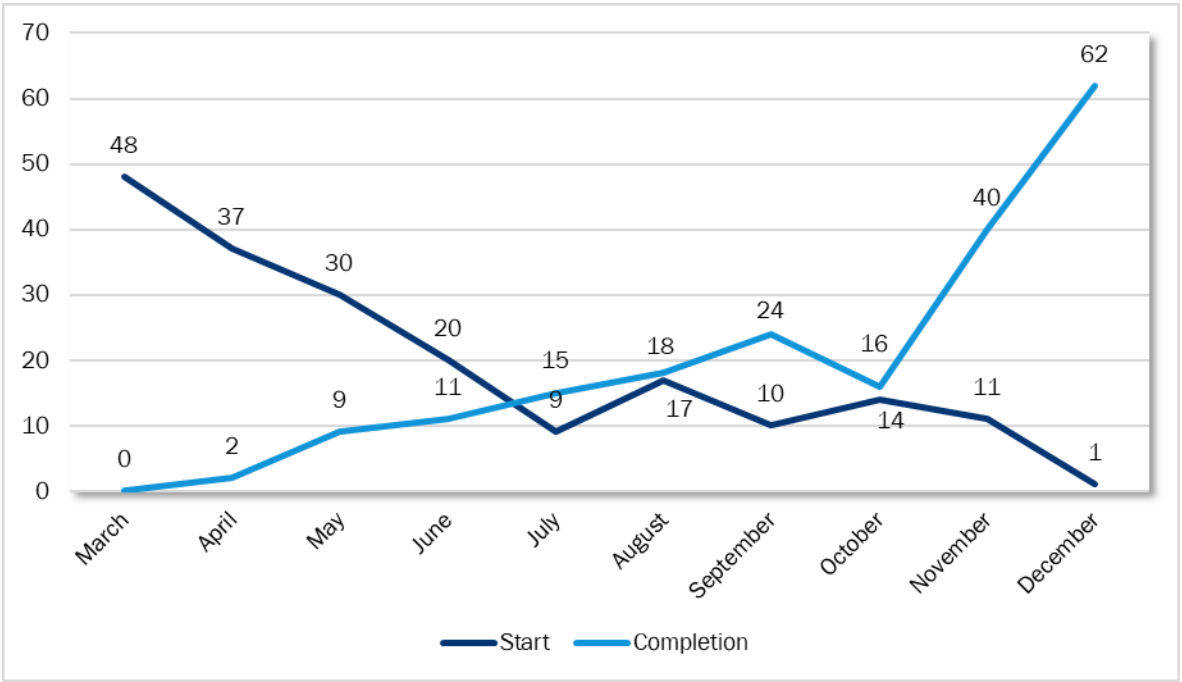



Figure 3-2. PY2019 Custom Program Monthly Project Starts and Completions



### Incentive Bonus

In an effort to increase PY2019 program participation, the BizSavers Program began offering a 10% completion bonus on July 19, 2019. The bonus applied to all BizSavers projects completed (and paperwork submitted) no later than December 20, 2019. Across all program participants, 53% of Standard projects and 33% of Custom projects received the incentive bonus.

Based on the project counts presented above (see Figure 3-1 and Figure 3-2), it appears that the incentive bonus might have motivated participants to complete their projects by the December deadline. Also, for both programs, there is a slight uptick in project starts in August. However, any August increases were small and not long-lasting -- for both Standard and Custom, dips are evident in September. Overall, it is difficult to discern the effect of the bonus by project counts alone, as there are a variety of factors that might have motivated participants to complete a project before the end of the calendar year, e.g., participants own fiscal year.

To further explore the impact of the bonus on participation, the participant and market partner surveys included a series of questions about the awareness of the bonus. Responses show the following:

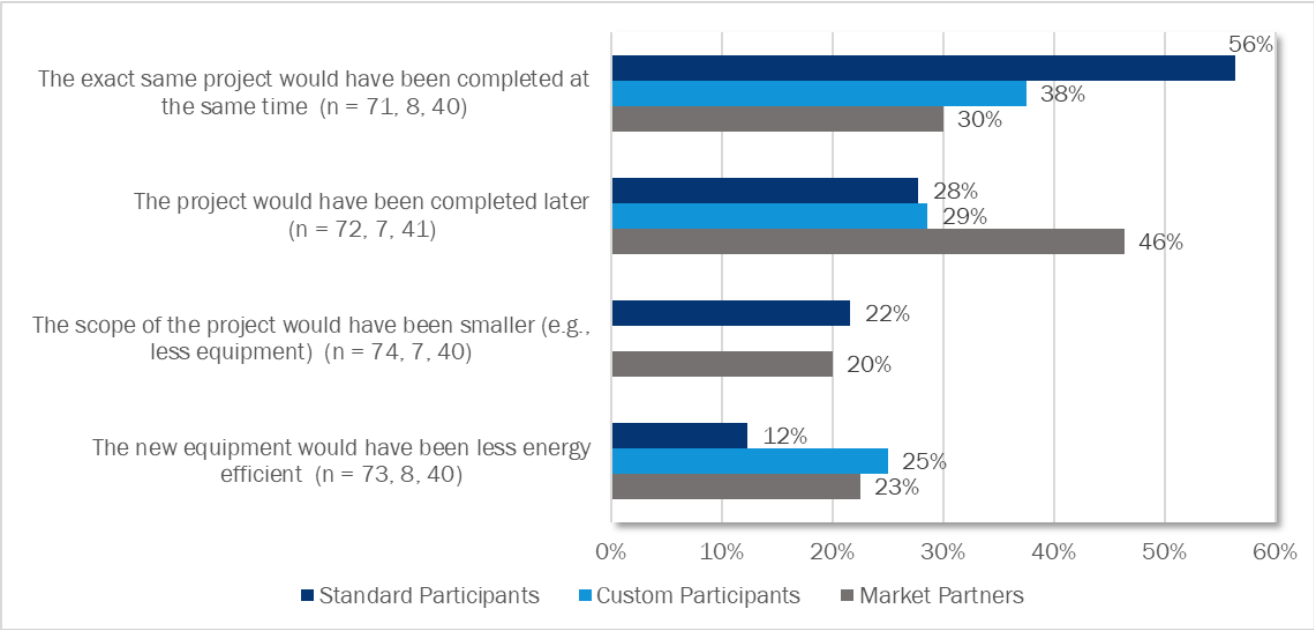
- Awareness of the bonus at the time of the survey was relatively low among Standard participants (60%). In contrast, all surveyed Custom participants who received the bonus (n=8) were aware, which is expected given the higher incentive levels and closer program interaction typical of the Custom Program.
- About half of surveyed participants (51% Standard; 63% Custom) who were aware of having received the incentive bonus reported being aware of it *before* they committed to purchasing the incented equipment.
- Of market partners who completed projects with an incentive bonus, 88% reported they were aware their projects included this bonus.

Finally, the surveys asked about the influence of the bonus on the timing, size, and efficiency of incentivized projects. Overall, it appears that the bonus did affect all three aspects for at least some participants and market partners (see Figure 3-3):[13]

- More than one half (56%) of interviewed bonus recipients said they would have done the same project in the same timeframe, while just over a quarter (28%) said the project would have been completed later. In contrast, 46% of market partners said that some of their projects would have been completed later without the bonus. Overall, 21% of Standard Program bonus recipients and 14% of market partners with bonus projects did not believe that the project would have been completed before January 1, 2020 without the bonus.
- Comparable shares of Standard Program bonus recipients (22%) and market partners (20%) agreed that without the bonus their project would have been smaller.
- Only 12% of bonus recipients in the Standard Program said the bonus affected the efficiency of the equipment, but 23% of market partners thought so.

[13] Participant results are discussed for the Standard Program only, due to small sample sizes for respondents with Custom projects that received a bonus.

Figure 3-3. Agreement with Statements About Project Without Incentive Bonus (Percent Agree or Strongly Agree)

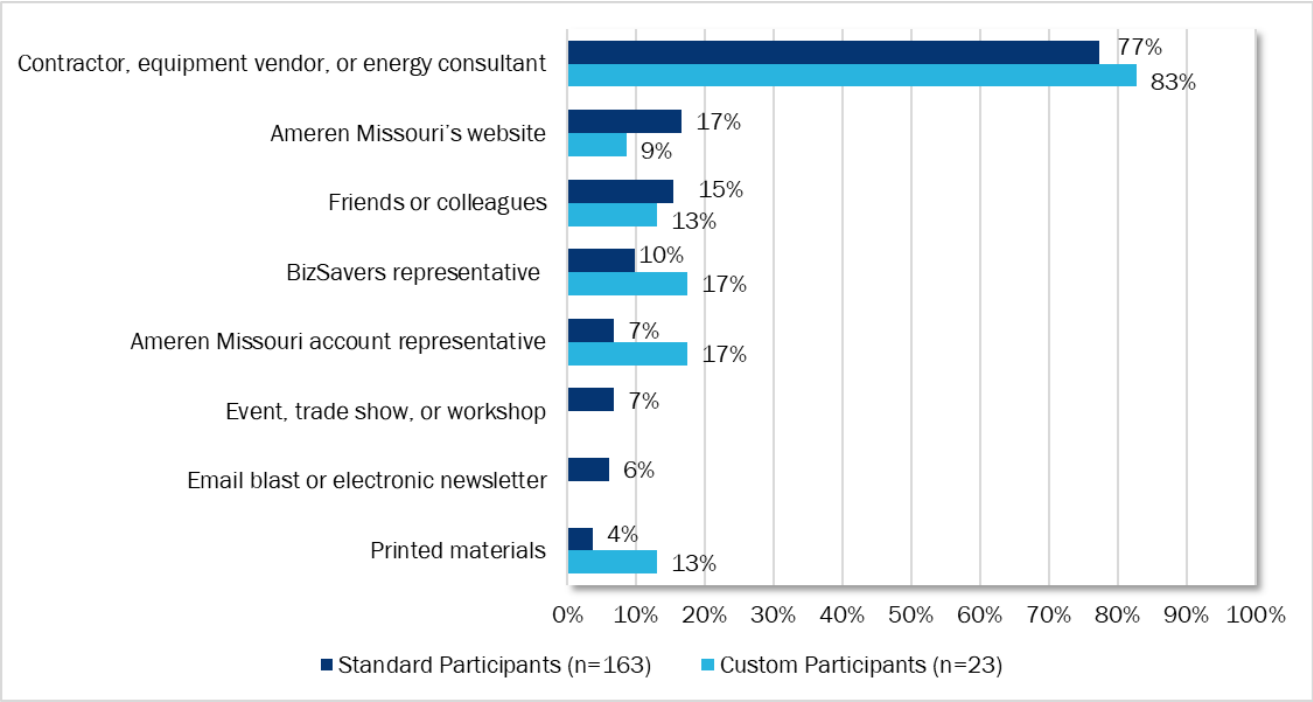



## Sources of Program Information

The large majority of respondents (77% Standard; 83% Custom) first learned about the BizSavers Program through their contractor, equipment vendor, or energy consultant, underscoring the importance of the BizSavers network of market partners in raising customer awareness (see Figure 3-4).[14] Other sources of program information include Ameren Missouri's website for Standard Program participants and an Ameren Missouri account representatives or a BizSavers representative for Custom Program participants.

[14] Repeat participants were asked how they learned about the program when the *first* applied for a BizSavers incentive.

Figure 3-4. How Participants First Learned About Ameren Missouri's BizSavers Incentives (Multiple Response)



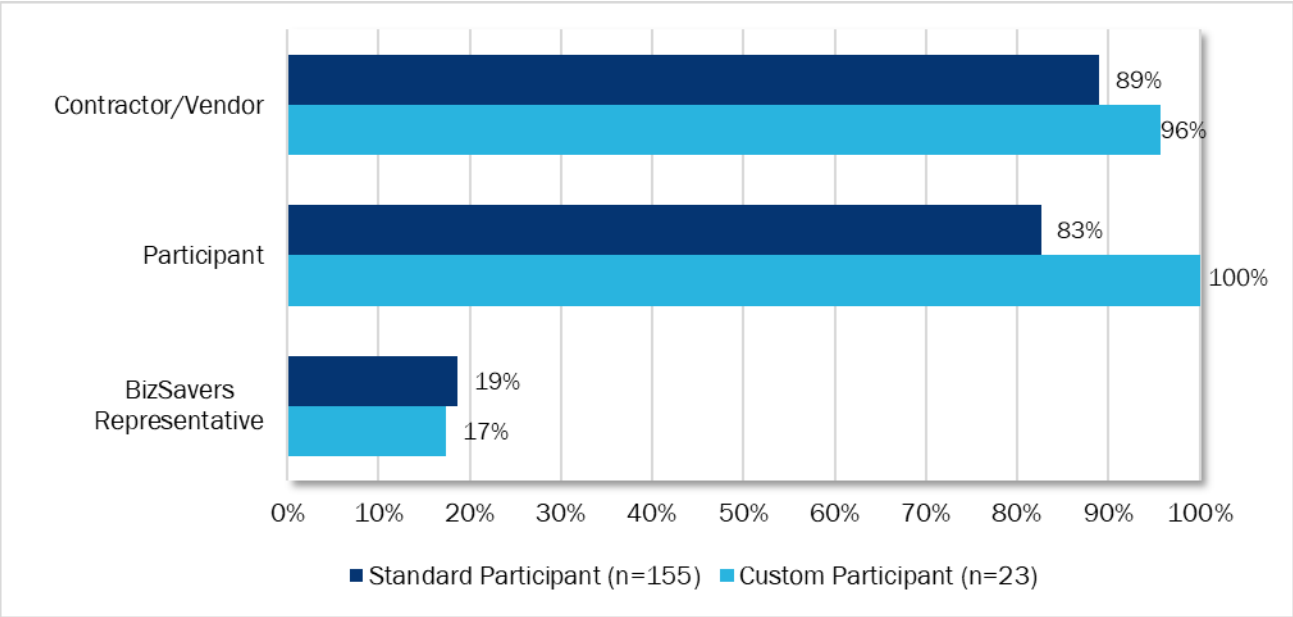

Although few participants first learned about the BizSavers incentives through an email blast or electronic newsletter, more than one third (35%) of all respondents indicated that this was the best way to inform their company of energy efficiency opportunities. Other preferred means of outreach commonly cited by participants include their contractor (19%), their Ameren Missouri account representative (11%), and bill messaging (9%).

## Application Process

Completing the BizSavers application appears to be a collaborative process, generally involving both the participating customer (83% Standard; 100% Custom) as well as their contractor/vendor (89% Standard; 96% Custom). BizSavers representatives play less of a role in the application process, with 19% and 17% of Standard and Custom respondents, respectively, reporting their involvement (see Figure 3-5).

Of the respondents who reported they had worked on the application themselves, only 38% of Standard participants and 18% of Custom participants reported they did not have direct contact with an Ameren Missouri BizSavers representative during the application process. Approximately one-third (33%) of Standard participants and one-quarter (22%) of Custom participants were required to resubmit or provide additional documentation before their application was approved.

Figure 3-5. Parties Contributing to Completing Program Application




### Pre-Approval

Ameren Missouri requires pre-approval for all Custom measures and certain Standard measures not identified as Fast-Track measures. Projects that only include Standard Fast-Track measures do not require pre-approval if the total incentives are anticipated to be less than $10,000.[15] While the BizSavers program provides incentives for most Standard measures on a per-unit basis (e.g., per lamp for lighting or per ton for HVAC equipment), Standard measures that receive pre-approval are eligible for a per-watt incentive rate. The pre-approval process allows the program to review larger and more complicated projects before they are complete and also provides the customer with clarity on the project's expected savings and incentive amount for planning.

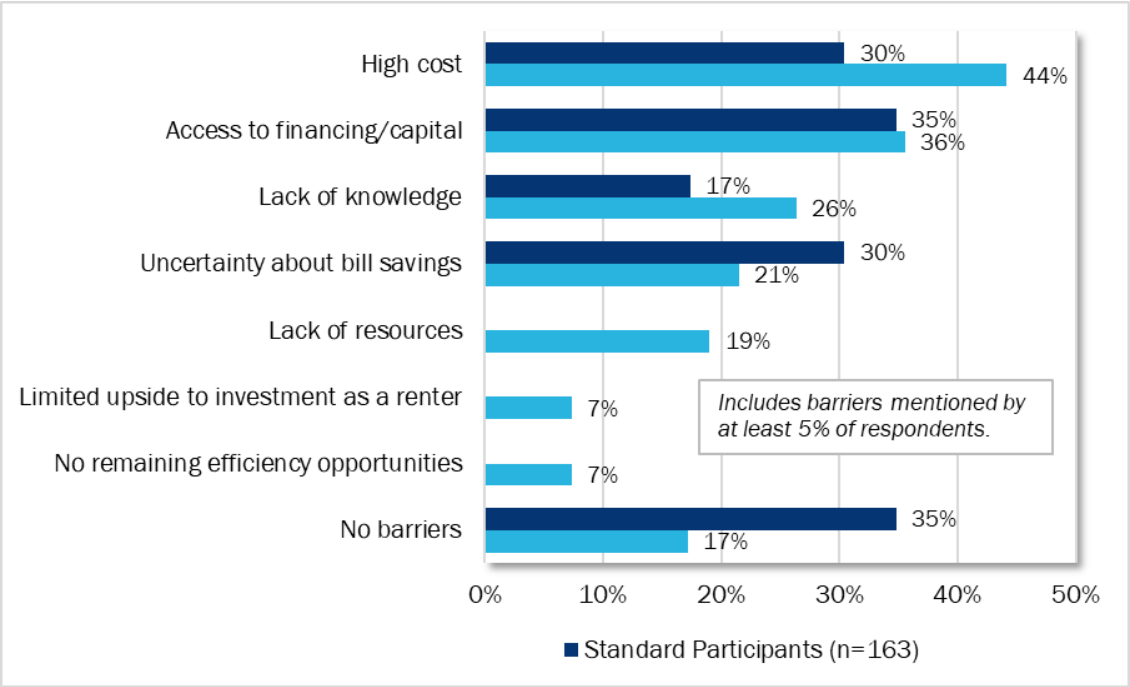
Most surveyed market partners (92%) have used the pre-approval process. These market partners generally find the pre-approval process easy – 85% consider it very or somewhat easy – and reported few issues. Of those who did experience issues, 40% thought that the pre-approval process takes too long.

## Barriers to Energy Efficiency and Program Participation

The main barriers for BizSavers participants to making energy efficiency improvements at their facilities are generally economic. The higher cost of energy-efficient equipment, access to financing or capital for energy improvements, and uncertainty about bill savings (see Figure 3-6) were all commonly mentioned barriers. Notably, 35% of Standard Program participants and 17% of Custom Program participant see no barriers to energy efficiency.

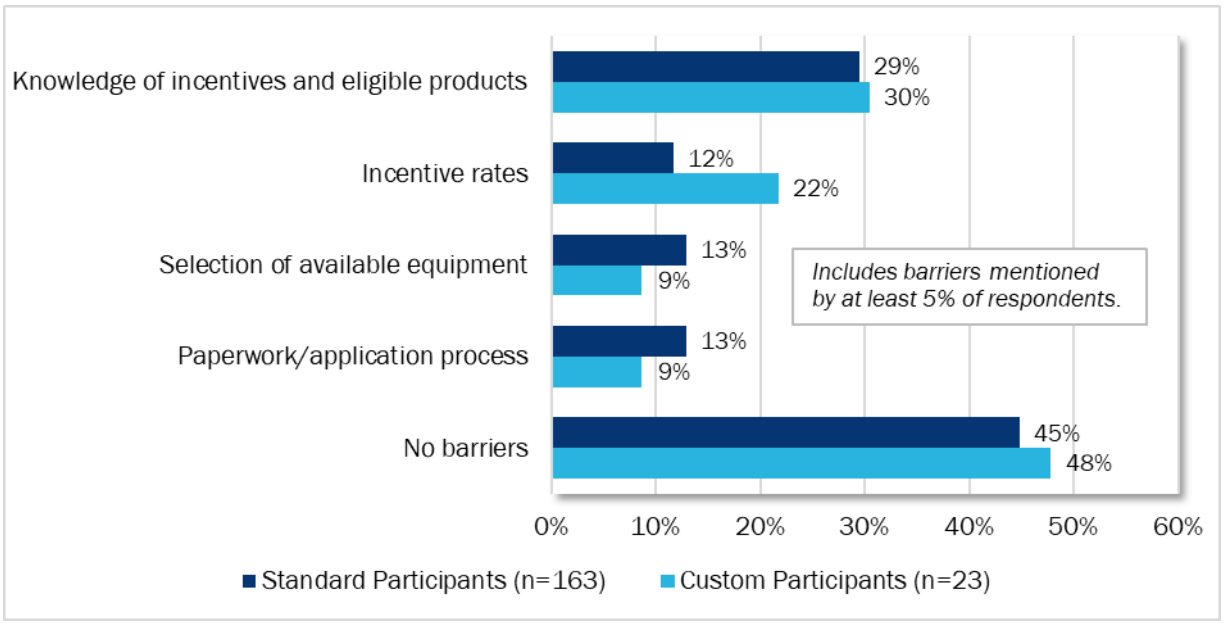
[15] Projects with at least one pre-approval measure require pre-approval for the entire project.

Figure 3-6. Barriers to Making Energy Efficient Improvements at Facility




Nearly half of participants do not see any barriers to completing projects specifically through the BizSavers program (see Figure 3-7). Among those who do see barriers, the most common is the knowledge of incentives and eligible products. Few respondents saw the application process/paperwork as a barrier, suggesting that the program has done a good job in streamlining its processes or providing customers with the help they need.

Figure 3-7. Barriers to Completing Projects Through the Ameren Missouri BizSavers Program



Participants (Figure 3-8) and market partners (Figure 3-9) both provided recommendations for reducing barriers to program participation. While participants most often noted the need for more program awareness and knowledge, incentives for more products and increased incentive levels ranked highly among both participants and market partners.

Figure 3-8. Standard and Custom Participant Suggestions to Reduce Program Participation Barriers

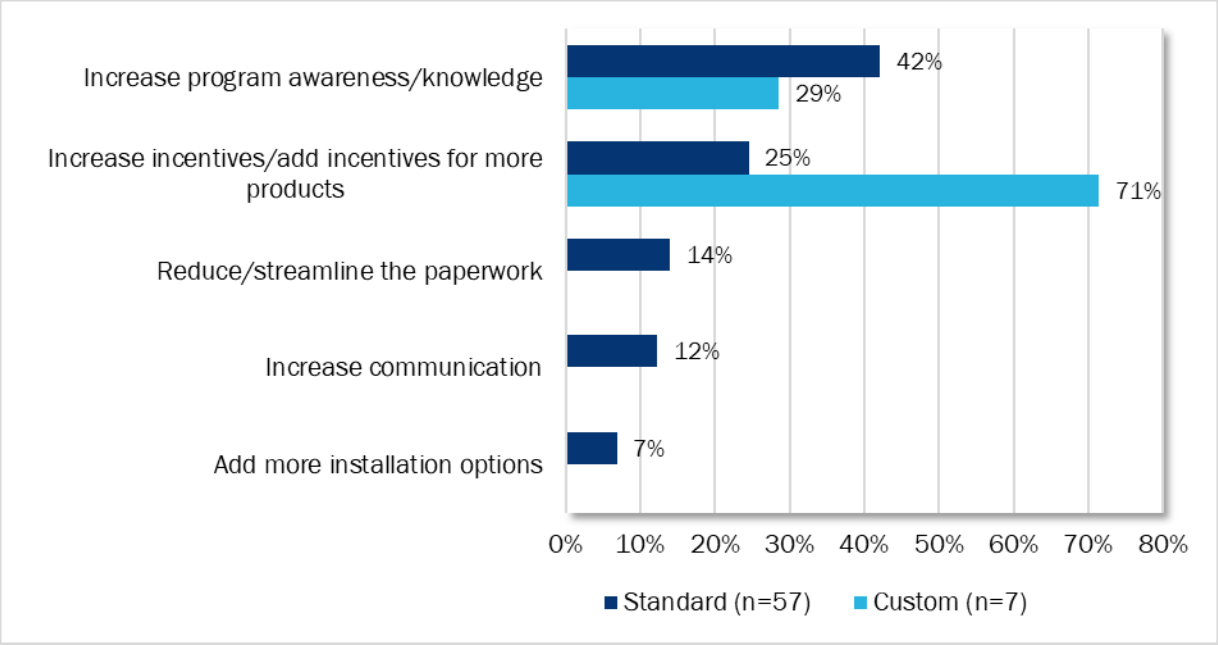
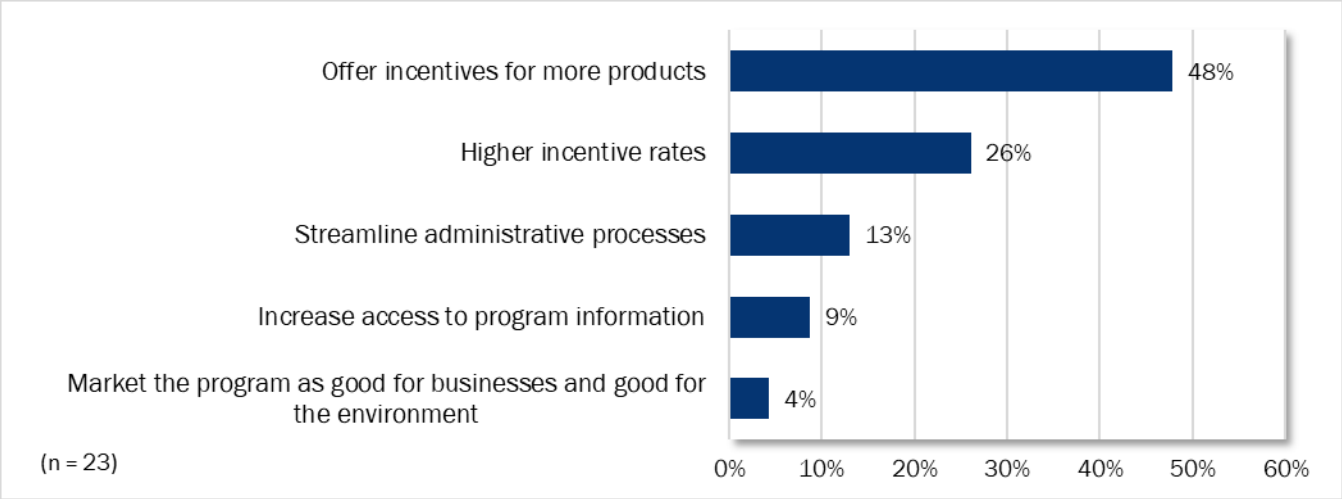



Figure 3-9. Market Partner Suggestions to Reduce Program Participation Barriers

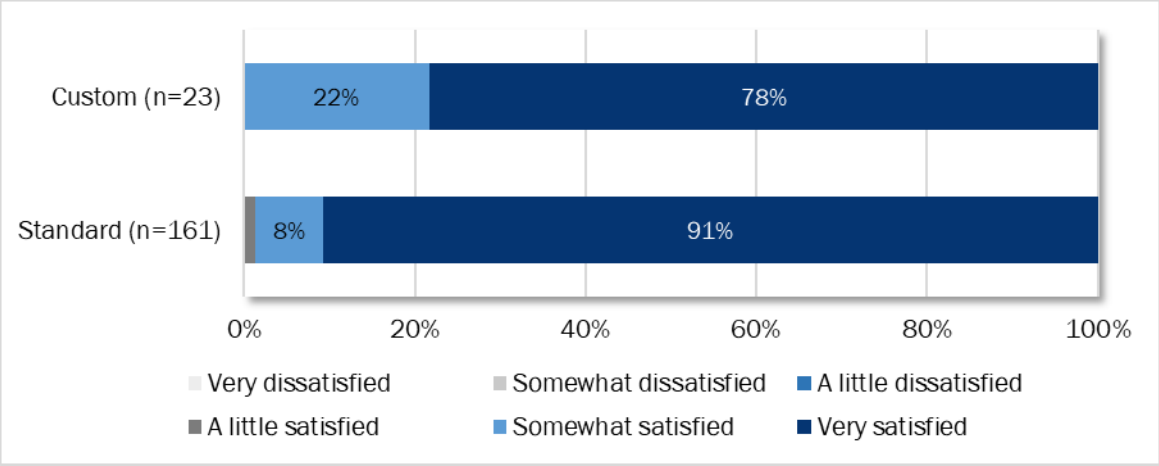



Although about three quarters (75%) of market partners reported the mix of products offered by the BizSavers program met the needs of their customers, many indicated the addition of outdoor lighting equipment would help them better serve their customers. More than one quarter (28%) of market partners indicated there were types of customers that were not sufficiently served by the BizSavers program in 2019, and 53% of these market partners reported these underserved customers include those with outdoor lighting needs.

## Participant Satisfaction

Participant satisfaction with Ameren Missouri's BizSavers Program overall is generally high. More than three quarters (78%) of Custom participants and 91% of Standard respondents reported being very satisfied with the program overall. Notably, no respondents reported being dissatisfied with the program (see Figure 3-10).

Figure 3-10. Participant Satisfaction with the BizSavers Program Overall




To help identify program processes or other aspects of the program that Ameren Missouri could improve in the future, the evaluation team asked BizSavers participants about their level of satisfaction with various elements of the BizSavers Program. Figure 3-11 and Figure 3-12 show that surveyed BizSavers Program participants were quite satisfied with all elements of the program about which we inquired. One area where both Standard and Custom participants indicated there may be room for improvement is the range of equipment that is eligible for incentives from Ameren Missouri (see additional discussion below).

Figure 3-11. Participant Satisfaction with Components of the Standard Incentive Program

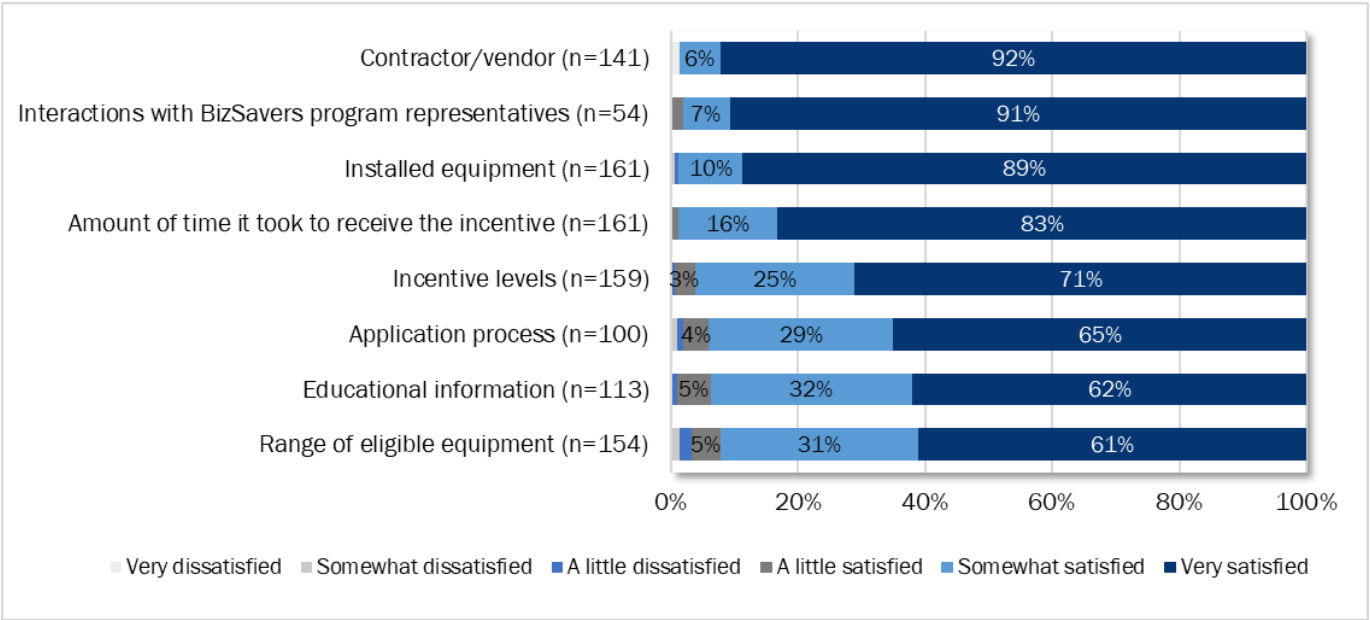
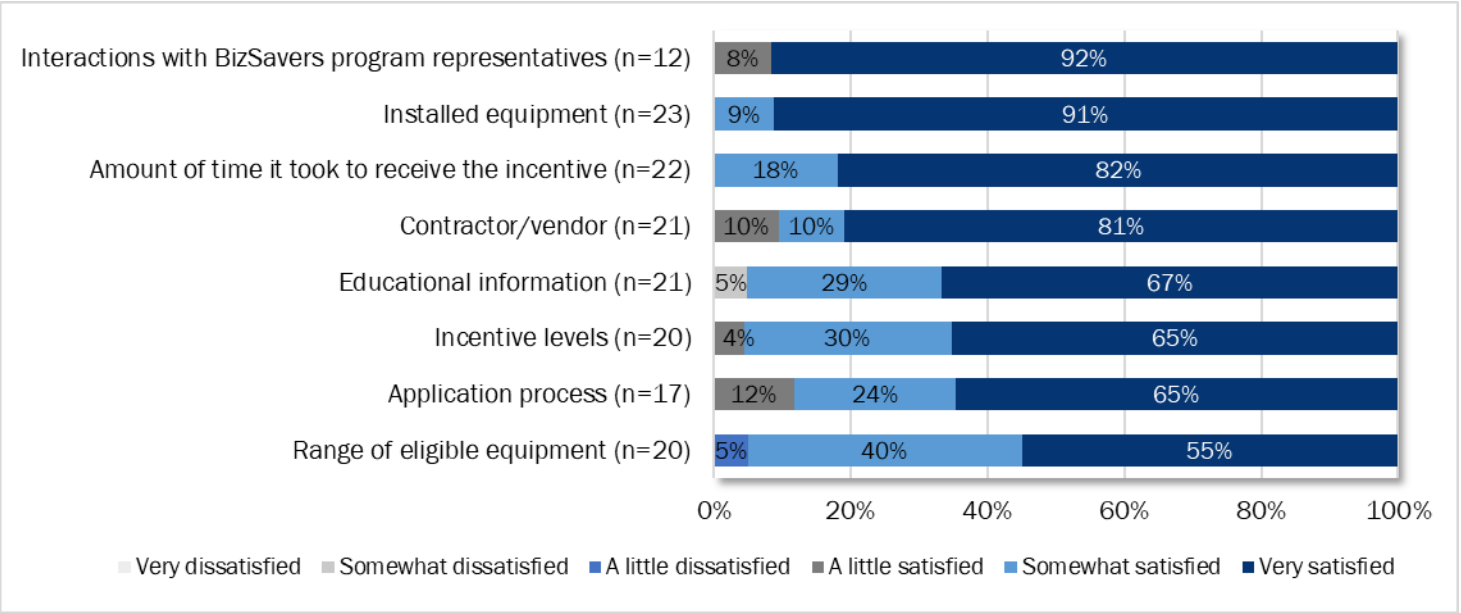


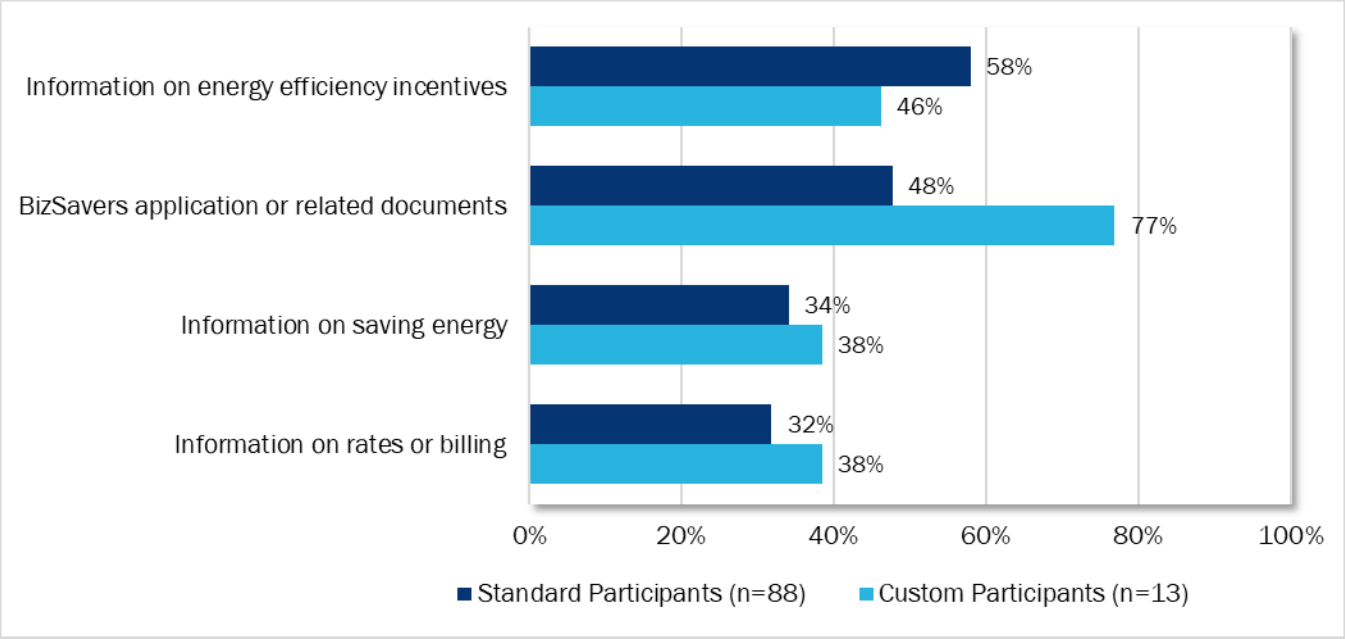
Figure 3-12. Participant Satisfaction with Components of the Custom Incentive Program




## Ameren Missouri Website

Slightly more than half (54%) of interviewed participants visited the Ameren Missouri website in the past 12 months. The shares of Standard and Custom participants who visited the site were nearly identical (54% and 57%, respectively). The most common reasons for visiting the website were to look for information on energy efficiency incentives or find the BizSavers application or related documents (see Figure 3-13). Other commonly sought content includes more general information on saving energy or rates and billing.

Figure 3-13. Information Sought on Ameren Missouri Website



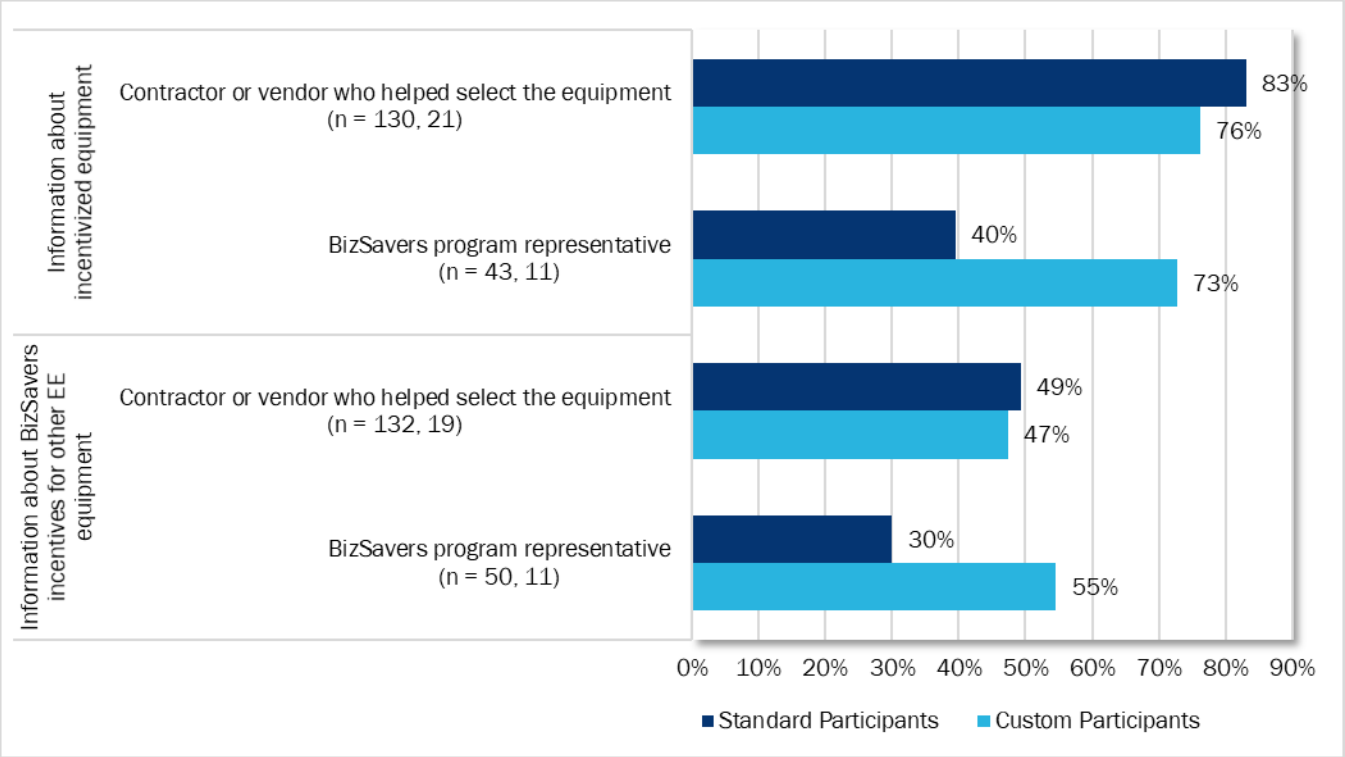

Nearly all participants who visited the website were able to find all of the information they wanted, either easily (85%) or with only some difficulty (9%). The small share of participants unable to find all desired information could not locate information about the BizSavers program or incentives, energy usage or savings data, or a phone number to call for assistance.

## Educational Materials

Large majorities of Standard and Custom participants (83% and 76%, respectively) who consulted a contractor or vendor before selecting their equipment received information about the equipment or its potential energy or utility bill savings from the contractor/vendor (see Figure 3-14). BizSavers representatives were equally likely to supply this type of information to Custom Program participants (73%) but less so to Standard Program participants (40%).

Both contractors/vendors and BizSavers representatives are slightly less likely to provide participants with information about other available BizSavers incentives. Here again, BizSavers representatives more often supply this information to Custom Program participants (55%) than to Standard Program participants (30%).

Figure 3-14. Educational Materials Supplied by Contractors and BizSavers Program Representatives




Almost one-third (31%) of respondents recalled receiving other educational information about energy efficiency or available incentives from a contractor or BizSavers program representative. The most commonly supplied information included equipment information, details on energy savings, and program information such as incentive rates and details about the incentive bonus.

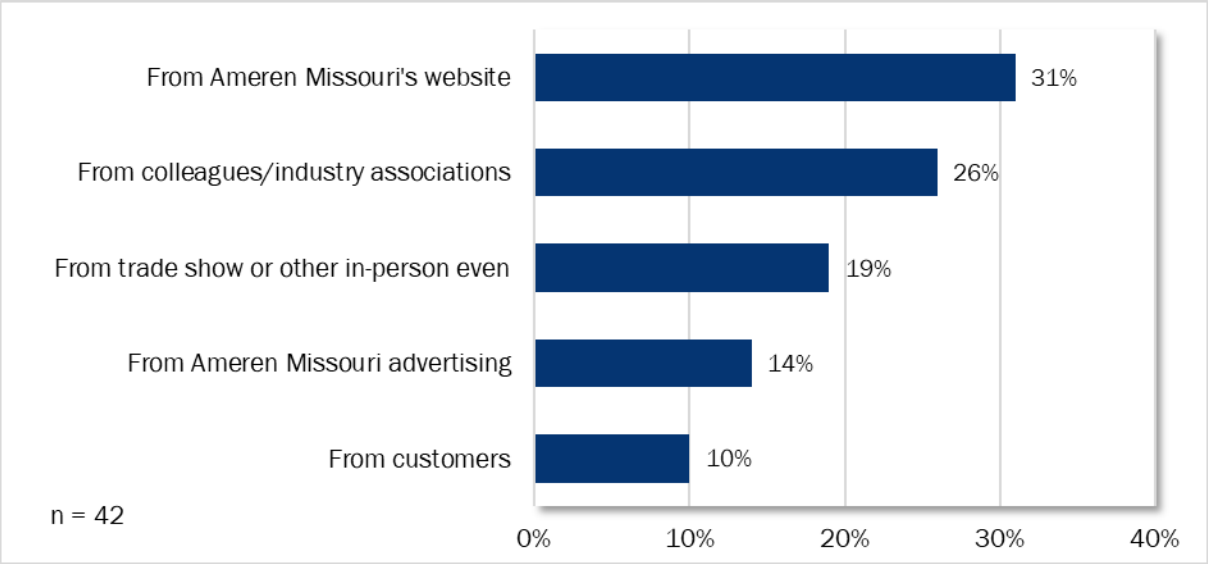
## Trade Ally Participation

While registered trade allies represent approximately half of all PY2019 market partners, these trade allies completed the large majority of PY2019 projects (85% Standard; 79% Custom). More than half of trade allies who responded to the survey have been a trade ally with the BizSavers Program since 2015 or earlier; only 12% became a trade ally in 2019. Notably, the program required market partners to renew their affiliation as registered trade allies for the 2019 program year, and several survey respondents who thought they were trade allies were not listed as such in the database.

Most respondents (69%) state that they became registered trade allies to better serve their customers in ways such as through faster or more streamlined rebate processing. Many trade allies also signed up to better promote their business.

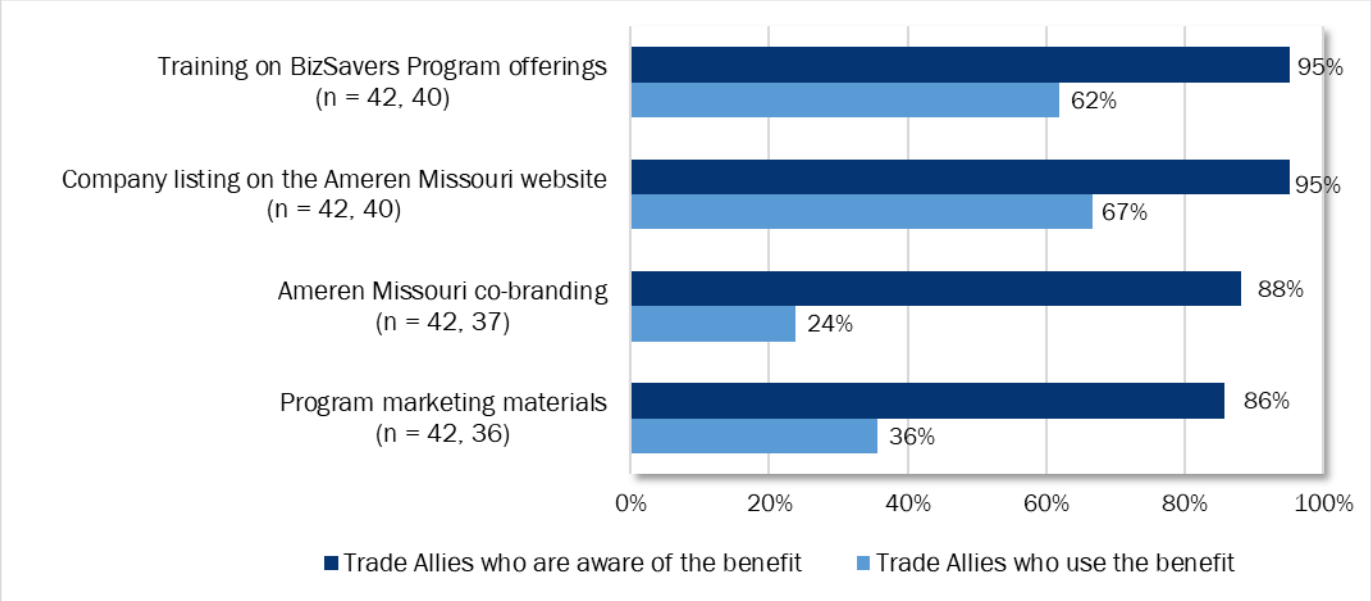
Trade allies most frequently first learn about the opportunity to register with the BizSavers Program through the Ameren Missouri website, followed by colleagues/industry associations. Figure 3-15 summarizes the various channels of program awareness for BizSavers Program trade allies.

Figure 3-15. How Trade Allies First Learned About Becoming an Ameren Missouri's BizSavers Program Trade Ally (Multiple Response)




To assess how widely trade allies utilize the benefits offered to registered trade allies, the market partner survey included questions about their awareness and use of various benefits (see Figure 3-16). Awareness of the various benefits was very high among trade allies, between 86% and 95%. The most frequently used benefits include company listing on the Ameren Missouri website (67% of those aware) and training on BizSavers program offerings (62% of those aware), while the least used benefit was utilizing co-branding (24% of those aware).

Figure 3-16. Trade Ally Program Benefits Awareness and Utilization



Trade allies were also asked to rate the importance of each benefit they have used to their company (on a scale of 0 to 10, where 0 means "not at all important" and 10 means "extremely important"). All four benefits received relatively high and consistent ratings, between 8.3 and 8.6 (see Table 3-6).

Table 3-6. Importance of Trade Ally Benefits (0=Not at All Important, 10=Extremely Important)

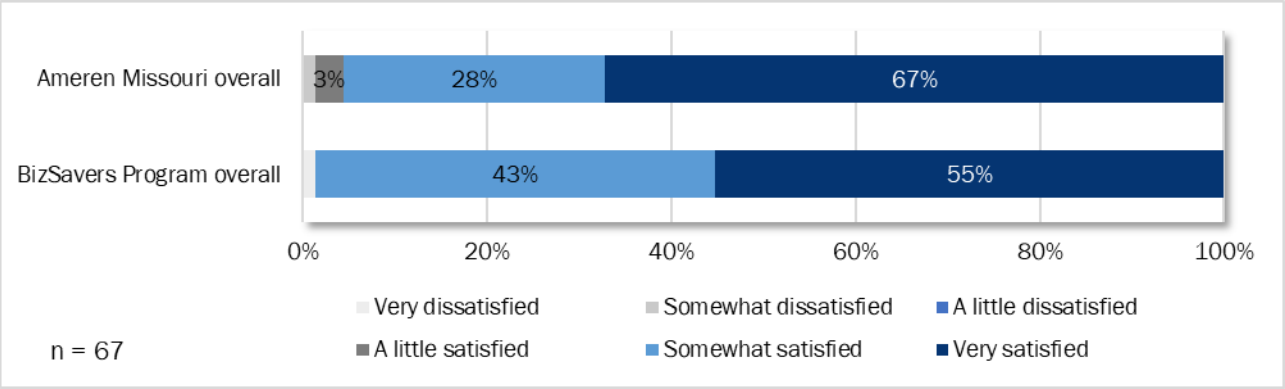
| Trade Ally Benefit | Average Score |
|---|---|
| Program marketing materials (n=15) | 8.6 |
| Company listing on the Ameren Missouri website (n=28) | 8.6 |
| Ameren Missouri cobranding (n=10) | 8.5 |
| Training on BizSavers Program offerings (n=26) | 8.3 |

Finally, the evaluation team also asked market partners who were *not* registered trade allies about their familiarity with the benefits offered to program trade allies. While close to half (48%) indicated they were very or somewhat familiar with the benefits, 36% indicated they were not at all familiar. When asked why they were not a program trade ally, the most common responses include being unaware of the opportunity or the benefits and not completing enough projects. Notably, six of the interviewed non-trade ally market partners (24%) thought that they were program trade allies or indicated that they had a trade ally been in the past and would like to become one again.

## Market Partner Satisfaction

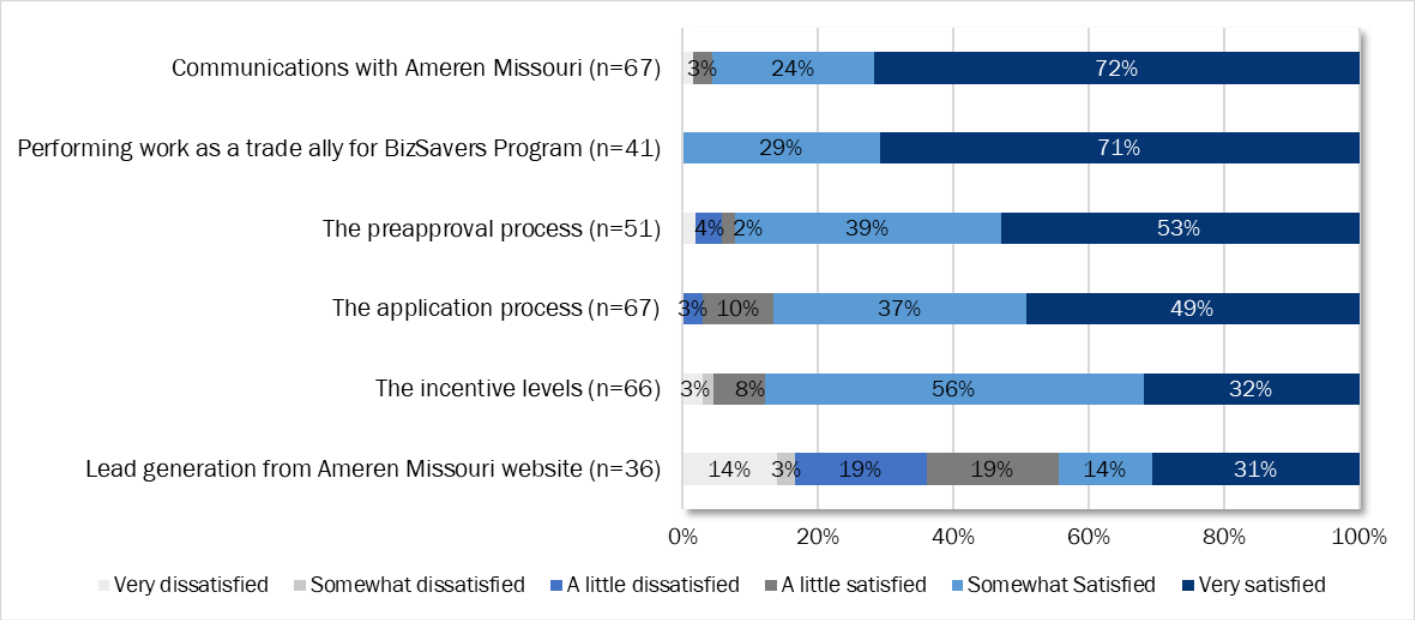
Market partners are generally satisfied with the Ameren Missouri and the BizSavers Program overall, with 67% and 55%, respectively, considering themselves "very satisfied". Only one market partner reported being "very dissatisfied" with the program and this was due to poor validation of savings calculations. Figure 3-17 shows market partner satisfaction with the Ameren Missouri and BizSavers Program overall.

Figure 3-17. Market Partner Satisfaction with the BizSavers Program Overall




Market partners are also satisfied with various BizSavers Program components, although less satisfied than participants. The lowest level of satisfaction among market partners is with lead generation from the Ameren Missouri website (see Figure 3-18). When asked to provide a reason why they were not fully satisfied with this program element, all applicable respondents (n=13) reported they had gotten few or no leads from the Ameren Missouri website.

Figure 3-18. Market Partner Satisfaction with BizSavers Program Components




## Recommendations for Program Improvement

Both participants and market partners were asked to name one change to the BizSavers Program they would like to make. While a majority of Standard and Custom program participants (54% and 57%, respectively) could not name any changes, 24% of Standard participants and 30% of Custom participants suggested that Ameren Missouri increase incentive amounts or add incentives for more products. Some Standard participants (9%) indicated the program should increase awareness of the program to potential participants and another 5% recommended further streamlining the application process.

Among interviewed market partners, 22% said they would add Standard incentives for exterior lighting products. This sentiment was repeated throughout the survey, including responses to market partner spillover questions (see Section 3.3.4 below). Among the market partners who indicated the mix of products offered by the BizSavers Program did not meet the needs of their customers, 64% indicated the addition of exterior lighting equipment would help them better meet the needs of their customers. Similarly, among the market partners who indicated there were types of customers not sufficiently served by the BizSavers program (28%), more than half (53%) reported that customers with outdoor lighting needs were underserved by the program. Market partners also recommended higher incentive levels (19%) and streamlining the application process (19%).

### 3.3.2 Gross Impact Results – Standard Program

This section summarizes gross impact results for the PY2019 Standard Incentive Program. Ex post gross savings are based on a sample of 91 projects (including 47 that received a desk review only and 44 that received a desk review and an onsite visit), extrapolated to the population.

Table 3-7 compares ex ante and ex post first year and last year gross savings, at the program level. As shown, the program achieved first year ex post gross energy savings and demand savings of 71,972 MWh and 14.36 MW, respectively, as well as last year ex post demand savings of 4.04 MW in the 10-14 Year EUL category and 10.32 MW in the 15+ Year EUL category.

Table 3-7. PY2019 Standard Program Gross Impacts

| | Ex Ante Gross | Gross RR | Ex Post Gross |
|---|---|---|---|
| **First Year Savings** | | | |
| Energy Savings (MWh) | 76,553 | 94.0% | 71,972 |
| Demand Savings (MW) | 14.69 | 97.7% | 14.36 |
| **Last Year Demand Savings** | | | |
| < 10 EUL (MW) | - | n/a | - |
| 10-14 EUL (MW) | 4.28 | 94.4% | 4.04 |
| 15+ EUL (MW) | 10.41 | 99.1% | 10.32 |

Most of the PY2019 savings for the Standard Program came from LED lighting, including LED linear tube retrofits, LED fixture retrofits, and omni-directional A19 LED bulbs. Additionally, the program realized savings from motors as well as HVAC, refrigeration, water heating, and cooking equipment. Table 3-8 summarizes first year gross savings and realization rates by enduse.

Table 3-8. PY2019 Standard Program First Year Gross Savings by Enduse

| | Energy Savings (MWh) | | | Demand Savings (MW) | | |
|---|---|---|---|---|---|---|
| **Enduse** | **Ex Ante** | **Gross RR** | **Ex Post** | **Ex Ante** | **Gross RR** | **Ex Post** |
| Lighting | 74,663 | 94.1% | 70,242 | 14.18 | 96.9% | 13.74 |
| Non-Lighting | 1,890 | 91.6% | 1,730 | 0.51 | 121.4% | 0.61 |
| *Motors* | *1,460* | | *1,336* | *0.20* | | *0.24* |
| *HVAC* | *318* | | *291* | *0.29* | | *0.35* |
| *Refrigeration* | *52* | *91.6%* | *47* | *0.01* | *121.4%* | *0.01* |
| *Water Heating* | *42* | | *39* | *0.01* | | *0.01* |
| *Cooking* | *18* | | *17* | *<0.01* | | *<0.01* |
| **Total** | **76,553** | **94.0%** | **71,972** | **14.69** | **97.7%** | **14.36** |

As shown in the tables above, gross RRs for the Standard Program ranged from 92% to 121%. Below, we provide additional detail on these results.

## Lighting Impacts

Based on the desk reviews and onsite visits for lighting projects, we made the following adjustments to ex ante savings assumptions:

- **Hours of use (HOU).** We confirmed HOU values in the program-tracking database through a review of project documentation and published business hours as well as interviews with facility staff (for projects with onsite visits). This resulted in adjustments for 45 of the 81 sampled lighting projects (36 based on onsite visits and 9 based on desk reviews). Combined, the 45 projects received an average HOU change of -5%, ranging from -80% to 117%. The overall average adjustment across all 81 sampled projects was -3%.
- **Waste Heat Factor (WHF) and Heating Penalty Interactive Factor (IF).** To calculate ex ante savings for all LED measures, the program implementer applies a modeled Heating and Cooling Interaction Factor (HCIF) of 1.07, encompassing waste heat factors and heating penalties (referred to as IF in the Ameren Missouri TRM). In contrast, the evaluation team applied building-specific WHFs and IFs for the sampled Standard projects, based on project documentation and in accordance with the Ameren Missouri TRM. Based on our analysis, ex post WHFs ranged from 1.00 to 1.14 with an average value of 1.08 across all 81 sampled projects. In addition, 17 of the 81 (21%) sampled sites were identified as having electric heating, with a range of IFs from -0.28 to 0, resulting in an average across all sampled projects of -0.04. Combined, the ex post WHF and IF closely align with the ex ante HCIF of 1.07. This may not be true in future program years, as these average values are dependent on the mix of participants' building space types and heating fuels, which could change over time.
- **Measure Quantity.** The ex post analysis used adjusted LED lamp or fixture quantities for 14 of the 81 sampled lighting projects (10 based on onsite visits and 4 based on desk reviews).
- **Lamp/Fixture Wattage.** The ex post analysis adjusted efficient lamp or fixture wattage values for 15 of the 81 sampled lighting projects. Wattage values were adjusted during the desk review process to align with product specifications.

Table 3-9 presents ex ante and ex post last year gross demand impacts by measure type and EUL category. As shown, the majority (72%) of last year demand savings comes from the 15+ Year EUL category, with linear LEDs (other than T12 replacements) accounting for the largest share. Realization rates for all lighting measures, except "other non-linear LEDs," is 96.9%. The realization rate for "other non-linear LEDs" is over 500%, due to the reclassification of one measure, LEDs replacing halogen A-lamps, from the 10-14 Year EUL category to the 15+ Year EUL category. The ex ante EUL for this measure was 12 years while the ex post EUL was 17 years, based on a memorandum provided by the implementer,[16] which was the agreed-upon source of EUL values for this evaluation.

[16] *Ameren Missouri MEEIA 2019-21 Energy, PCDR, and EUL Methodology.* BizSavers Implementation Team. Dated January 30, 2019.

Table 3-9. PY2019 Standard Program Annual Last Year Gross Demand Impacts for Lighting Measures

| Measure Category | 10-14 Year EUL | | | 15+ Year EUL | | |
|---|---|---|---|---|---|---|
| | Ex Ante (MW) | Gross RR | Ex Post (MW) | Ex Ante (MW) | Gross RR | Ex Post (MW) |
| Other Linear LED | 1.12 | 96.9% | 1.08 | 6.43 | 96.9% | 6.23 |
| LED Replacing T12 | 0.14 | 96.9% | 0.13 | 2.85 | 96.9% | 2.77 |
| Other Non-Linear LED | 2.87 | 91.8% | 2.64 | 0.03 | 537.8% | 0.18 |
| Lighting Redesign | - | n/a | - | 0.53 | 96.9% | 0.51 |
| LED Replacing Incandescent A-Lamp | - | n/a | - | 0.21 | 96.9% | 0.20 |
| LED Exit Sign | - | n/a | - | <0.01 | 96.9% | <0.01 |
| **Total** | **4.13** | **93.4%** | **3.85** | **10.06** | **98.3%** | **9.89** |

## Non-Lighting Impacts

The ex post analysis used custom savings analyses for seven of the 10 sampled non-lighting projects, including building energy modeling methods for the four sampled chiller VFD pump projects. The analysis for the other three projects used whole-building billing data regression analysis, isolated retrofit metering data analysis, and custom engineering savings calculations, respectively. Given the variety of enduses and analytical approaches used for the sampled non-lighting projects, it is impossible to generalize drivers of differences between ex ante and ex post results.

Table 3-11 shows the first year energy and demand realization rates for the 10 sampled non-lighting projects, including each project's enduse and sampling stratum. Appendix B provides project-specific desk review and onsite reports, which contain additional detail about the methods used to evaluate these projects and ex post results.

Table 3-10. First Year Realization Rates for Sampled Standard Non-Lighting Projects

| Enduse | Stratum [A] | Realization Rate | |
|---|---|---|---|
| | | Energy | Demand |
| Motors | 3 | 107% | *107%* |
| Motors | 3 | 83% | *83%* |
| Motors | 2 | 44% | *292%* |
| Motors | 2 | 83% | *83%* |
| Motors | 2 | 35% | *231%* |
| HVAC | 2 | 232% | *232%* |
| HVAC | 1 | 100% | *100%* |
| HVAC | 1 | 77% | *77%* |
| HVAC | 1 | 100% | 100% |
| Refrigeration | 1 | 82% | 95% |

[A] *1 = small, 2 = medium, 3 = large project*

### 3.3.3 Gross Impact Results – Custom Program

This section summarizes gross impact results for the PY2019 Custom Incentive Program. Ex post gross savings are based on a desk review and onsite sample of 31 projects, extrapolated to the population.

Table 3-11 compares ex ante and ex post first year and last year gross savings, at the program level. As shown, the program achieved first year ex post gross energy savings and demand savings of 16,427 MWh and 8.34 MW, respectively, as well as last year ex post demand savings of 1.55 MW in the 10-14 Year EUL category and 6.79 MW in the 15+ Year EUL category.

Table 3-11. PY2019 Custom Program Gross Impacts

| | Ex Ante Gross | Gross RR | Ex Post Gross |
|---|---|---|---|
| **First Year Savings** | | | |
| Energy Savings (MWh) | 16,807 | 97.7% | 16,427 |
| Demand Savings (MW) | 8.71 | 95.7% | 8.34 |
| **Last Year Demand Savings** | | | |
| < 10 EUL (MW) | - | n/a | - |
| 10-14 EUL (MW) | 1.58 | 97.7% | 1.55 |
| 15+ EUL (MW) | 7.12 | 95.3% | 6.79 |

Most of the PY2019 savings for the Custom Program come from HVAC projects, with compressed air and lighting projects accounting for the next largest shares of savings. Table 3-12 summarizes first year gross savings and realization rates by enduse.

Table 3-12. PY2019 Custom Program First Year Gross Savings by Enduse

| | Energy Savings (MWh) | | | Demand Savings (MW) | | |
|---|---|---|---|---|---|---|
| **Measure Category** | **Ex Ante** | **Gross RR** | **Ex Post** | **Ex Ante** | **Gross RR** | **Ex Post** |
| HVAC | 11,857 | 97.8% | 11,591 | 7.92 | 95.3% | 7.55 |
| Compressed Air | 2,520 | 100.1% | 2,522 | 0.35 | 100.1% | 0.35 |
| Lighting | 2,024 | 93.4% | 1,890 | 0.36 | 99.5% | 0.36 |
| All Others | 406 | 104.6% | 425 | 0.08 | 102.7% | 0.09 |
| *Refrigeration* | *173* | *104.6%* | *181* | *0.02* | *102.7%* | *0.02* |
| *Motors* | *129* | | *135* | *0.02* | | *0.02* |
| *Building Shell* | *87* | | *91* | *0.04* | | *0.04* |
| *Water Heating* | *16* | | *17* | *<0.01* | | *<0.01* |
| **Total** | **16,807** | **97.7%** | **16,427** | **8.71** | **95.7%** | **8.34** |

- **HVAC**: The gross energy and demand realizations rates for custom HVAC measures are 98% and 95%, respectively. The difference between ex ante and ex post gross savings are driven by the following:
  - The evaluation team observed key differences between ex ante and ex post assumptions for HVAC measures, primarily in the approach to quantifying energy and demands savings. The ex ante analysis used a weather bin load calculator, which incorporates TMY3 weather data, to estimate savings. The ex post analysis used billing regression analysis in combination with the ex ante

weather bin load calculator adjusted for actual program year weather data. This approach provided the evaluation team with two points of validation. As a result of this approach, HVAC measures within the sampled projects achieved realization rates ranging from 36% to 151%, with an average of 97% (before final weighting and extrapolation to the population).

- **Lighting:** The gross energy and demand realizations rate for custom lighting measures are 93% and 99%, respectively. Similar to standard lighting measures, differences between ex ante and ex post savings are driven by HOU assumptions and the alignment of WHFs and IFs with those in the Ameren Missouri TRM.

### 3.3.4 Net Impact Results

#### Net-to-Gross Results

The evaluation team conducted research with 163 Standard Program participants, 23 Custom Program participants, and 67 Standard/Custom market partners to develop NTGRs for PY2019. We estimate the program-level NTGR to be 84.2% for the Standard Program and 87.9% for the Custom Program. Table 4-8 presents the individual NTG components (i.e., FR, PSO, and MPSO) and the resulting NTGRs for both programs. The NTGR is calculated as 1 – FR + PSO + MPSO.

Table 3-13. Summary of Standard and Custom NTG Results

| Program | Free Ridership | Participant SO | Market Partner SO | NTGR [a] |
|---|---|---|---|---|
| Standard | 17.1% | 0.42% | 0.91% | 84.2% |
| Custom | 14.1% | 0.00% | | 87.9% |

[a] NTGR = 1 – FR + PSO + MPSO

#### Free Ridership

A total of 156 Standard Program participants and 22 Custom Program participants provided valid responses to the FR questions in the participant survey and were included in the FR analysis.[17] Using the algorithm summarized in Chapter 0 we estimate program-level FR to be 17.1% for the Standard Program and 13.0% for the Custom Program.

We attempted a census of unique project contacts for both the programs. As such, the concept of sampling precision does not apply. Table 4-9 summarizes the FR estimates for the Standard and Custom programs.

Table 3-14. Summary of Standard and Custom FR Estimates

| Program | n | Free Ridership |
|---|---|---|
| Standard | 156 | 17.1% |
| Custom | 22 | 13.0% |

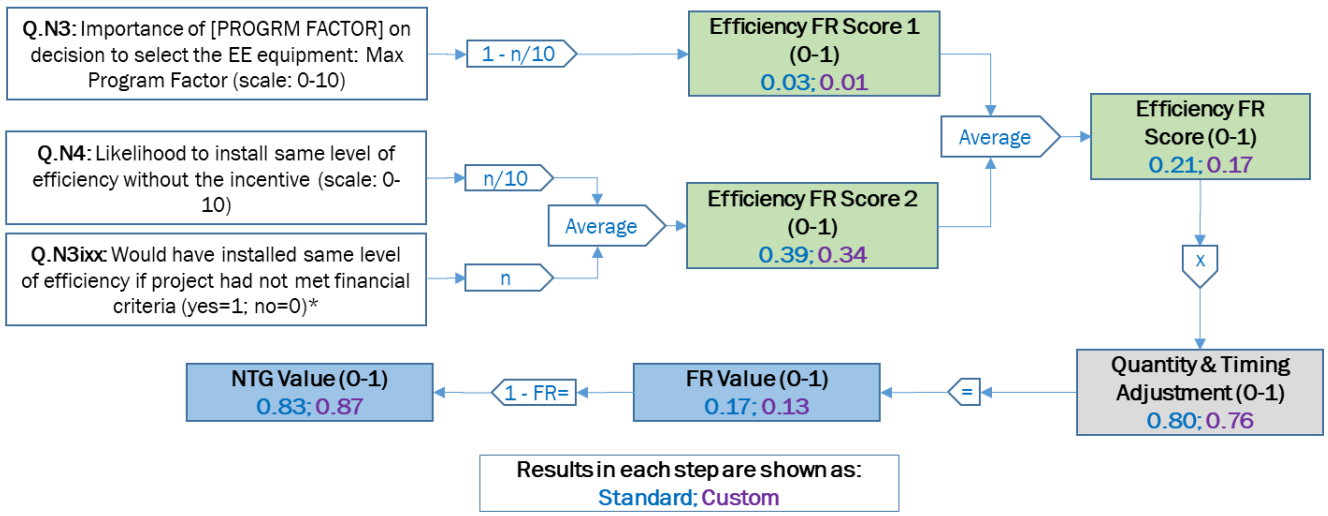
Participants' FR related survey responses show the following:

[17] An additional seven Standard Program participants and one Custom Program participant were excluded from the FR analysis due to incomplete or unreliable responses (e.g., straight-lining).

- **Efficiency:** Surveyed participants generally reported a high degree of program influence on the efficiency level of their projects, resulting in savings-weighted Efficiency FR Scores of 0.21 for the Standard Program and 0.17 for the Custom Program.
- **Quantity:** The program had a significant influence on the scope of many incented projects. Respondents reported that 61% of the Standard incented measures and 49% of the Custom incented measures would not have been installed at the same time without the program.
- **Timing:** Similar to the program's influence on quantity, participants reported that the program was responsible for accelerating their projects. The resulting timing adjustment factors, applied to the quantity that participants would not have installed at the same time without the program, were 0.55 for the Standard Program and 0.52 for the Custom Program.[18]
- **Quantity and Timing Adjustment:** Combining the responses to the quantity and timing questions resulted in overall Quantity and Timing Adjustments of 0.80 for the Standard Program and 0.76 for the Custom Program, meaning that the programs can claim credit for 20% (1 – 0.80 = 0.20) of Standard savings and 24% (1 – 0.76 = 0.24) of Custom savings that would be considered free rider savings based on efficiency alone.

The following figure summarizes FR results for Standard and Custom participants.

Figure 3-19. Free Ridership Results – Standard and Custom




**Asked only in Wave 2 of those who rated importance of financial criteria >7 and indicated that the incentive caused the project to meet their financial criteria. Applied adjustment for Wave 1 respondents.*

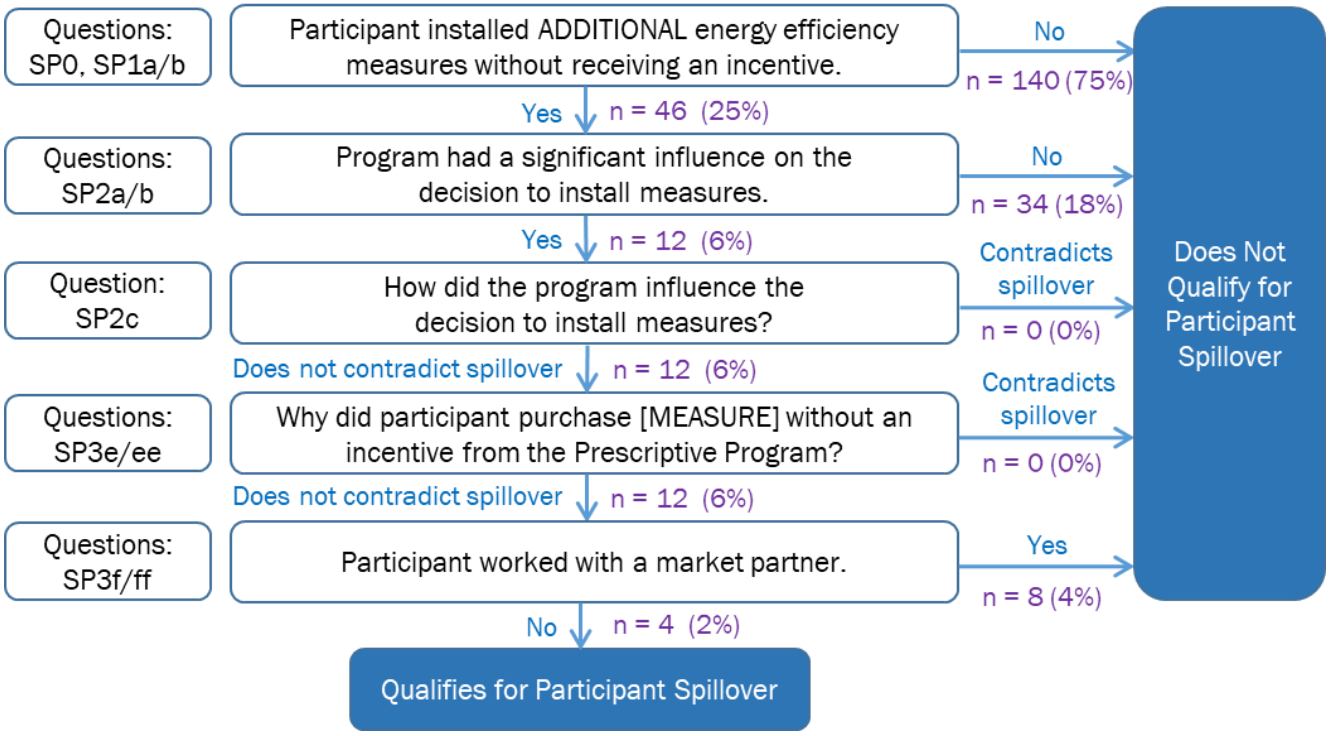
## Participant Spillover

A total of 186 Standard and Custom participants completed the spillover questions in the participant survey and were included in the PSO analysis. Most of these participants (75%) did not install any additional energy efficiency measures without receiving an incentive or did install additional measures but were not significantly influenced by the program (18%). Four respondents (2%) qualified for PSO; all four were PY2019 participants in the Standard Program only.

[18] A higher factor means a lower adjustments, i.e., less program influence on the timing of the project.

Figure 4-10 summarizes the analysis of PSO eligibility.

Figure 3-20. Participant Eligibility for Spillover - Results




We estimated spillover savings for the four respondents with PSO, using TRM algorithms and a combination of survey responses and deemed savings assumptions. In addition, we conducted a follow-up call with one of the four respondents, which allowed us to collect additional information on the completed installations (a walk-in freezer).[19] Table 4-10 summarizes the PSO measures, our analysis approach, and the resulting savings.

[19] Two of the other three declined to be contacted and one could not be reached.

Table 3-15. Summary of Measure-Level Participant Spillover

| Respondent | Measure | Quantity | Analysis Summary | kWh Per-unit | Total kWh |
|---|---|---|---|---|---|
| #1 | Walk-in Freezer | 1 | Engineering analysis based on information provided in follow-up call and deemed savings assumptions from the Pennsylvania TRM.[A] | 5,013 | 5,013 |
| #2 | T8s | 30 | Engineering analysis based on survey responses and Ameren Missouri deemed savings assumptions. | 42 | 1,259 |
| | CFL | 1 | | 37 | 37 |
| #3 | Exterior Lighting (HID Replacement) | 20 | Engineering analysis based on survey responses and Ameren Missouri deemed savings assumptions. | 1,058 | 21,159 |
| #4 | Exterior Lighting (Halogen Replacement) | 7 | Engineering analysis based on Ameren Missouri deemed savings assumptions and assumptions from other exterior lighting projects (reported as part of the PSO module; 5 were screened out due to program influence or working with a market partner). | 161 | 1,128 |
| **Total (All Standard)** | | | | | **28,596** |

[A] *Pennsylvania PUC. Technical Reference Manual Volume 3: Commercial and Industrial Measures. August 2019.* http://www.puc.pa.gov/filing_resources/issues_laws_regulations/act_129_information/technical_reference_manual.aspx

To determine the PSO Rate for the Standard Program, we divided PSO savings by the total ex post gross savings of the sampled Standard projects completed by the survey respondents. This calculation yielded a PSO rate of 0.42% for the Standard Program.

$$PSO\ Rate = \frac{PSO}{Ex\ Post\ Gross\ Impacts} = \frac{28{,}596\ kWh}{6{,}800{,}754\ kWh} = 0.42\%$$

Since no surveyed PY2019 participants in the Custom Program reported spillover, the PSO Rate for the Custom Program is 0%.

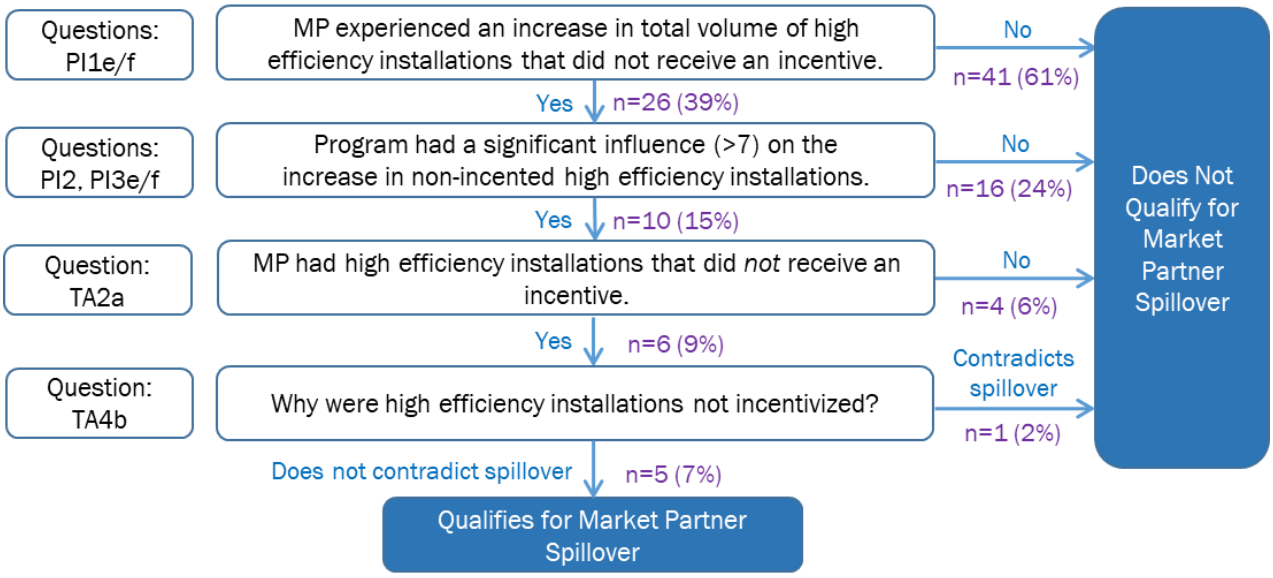
### Market Partner Spillover

A total of 67 Standard and Custom market partners completed the SO section of the online survey. More than one-third of responding market partners (39%) reported increases in non-incented high-efficiency installations and 15% attribute these increases to the program. Market partners most often credit the BizSavers program with helping them better serve their customers and making the projects more economical for their customers. However, market partners also pointed to market factors unrelated to the program that contributed to increases in non-incented high-efficiency sales, such as longer-term energy savings and increased awareness among customers.

More than half of market partners (60%) reported having installed at least one high-efficiency project that did not receive a program incentive during the evaluation period. On average, market partners reported that 20% of their installations during the evaluation period were standard efficiency, while 58% were high efficiency and received an incentive and 22% were high efficiency and did not receive an incentive. On average, market partners estimated that non-incented, high efficiency installations were similarly sized (97% the size) as those that received an incentive from the BizSavers Program.

Overall, 7% of responding market partners qualified for MPSO. Those who did not qualify experienced no increase in their energy efficient installations (61%); were not influenced by the program (24%); had no high efficiency installations that received an incentive (6%); or provided an open-ended response that contradicted the presence of SO (2%). Figure 3-21 summarizes these MPSO eligibility results.

Figure 3-21. Market Partner Eligibility for Spillover – Results




Notably, all five market partners who qualified for SO named exterior lighting as program-influenced non-incented measures they installed, and all five noted that the installations were completed without an incentive because incentives were not available. One of these market partners noted that they would install a lot more exterior LED lighting, if incentives were still available.

We estimated SO savings for each of the five market partners who qualified for SO using the market partner's program savings from the program tracking database as well as their survey responses on (1) the share of high efficiency installations that received a program incentive; (2) the share of high efficiency installations without an incentive that were strongly influenced by program activity in 2019; and (3) the relative size of incented and non-incented projects (for market partners who could not report the respective shares of total high-efficiency installations that did and did not receive a program incentive). Respondent-level MPSO savings ranged from 26 MWh to 139 MWh (see Table 3-16).

Table 3-16. Summary of Respondent-Level Market Partner Spillover

| Market Partner | **Ex-Post Gross Program Savings (kWh)** | **Percent of High-Efficiency Installations That Did Not Receive an Incentive** | Percent of Non-Incented EE Projects Strongly Influenced by PY2019 Program | Size Adjustment | **Estimated Spillover Savings (kWh)** |
|---|---|---|---|---|---|
| #1 | 1,323,013 | 12% | 90% | 88% | 138,916 |
| #2 | 439,927 | 25% | 70% | -- | 102,650 |
| #3 | 894,099 | 10% | 100% | -- | 99,344 |
| #4 | 20,630 | 95% | 10% | -- | 39,196 |
| #5 | 52,453 | 33% | 100% | -- | 26,227 |
| **Total** | | | | | **406,333** |

The SO savings from these market partners (accounting for 406 MWh) were used to extrapolate SO savings for the population of participating market partners. Using the methodology described in Chapter 0, we estimated a respondent SO Ratio of 0.92% and a program-level SO Ratio of 0.91%.

## Net Impacts

The evaluation team applied the PY2019 NTGRs to determine net impacts for the PY2019 Standard and Custom programs.

Table 4-11 presents PY2019 first year ex post net impacts for the two programs, by enduse. The Standard Program generated 60,622 MWh of net energy savings and 12.10 MW of net demand savings, while the Custom Program generated 14,441 MWh of net energy savings and 7.33 MW of net demand savings.

Table 3-17. PY2019 Standard and Custom Program Annual First Year Net Impacts

| Enduse | Energy Savings | | | Demand Savings | | |
|---|---|---|---|---|---|---|
| | Ex Post Gross (MWh) | NTGR | Ex Post Net (MWh) | Ex Post Gross (MW) | NTGR | Ex Post Net (MW) |
| **Standard Incentive Program** | | | | | | |
| Lighting | 70,242 | 84.2% | 59,165 | 13.74 | 84.2% | 11.58 |
| Non-Lighting | 1,730 | | 1,457 | 0.62 | | 0.52 |
| *Motors* | *1,336* | | 1,126 | *0.24* | | 0.21 |
| *HVAC* | *291* | | 245 | *0.35* | | 0.30 |
| *Refrigeration* | *47* | | 40 | *0.01* | | 0.01 |
| *Water Heating* | *39* | | 33 | *0.01* | | 0.01 |
| *Cooking* | *17* | | 14 | *<0.01* | | 0.00 |
| **Total Standard** | **71,972** | **84.2%** | **60,622** | **14.36** | **84.2%** | **12.10** |
| **Custom Incentive Program** | | | | | | |
| HVAC | 11,591 | 87.9% | 10,190 | 7.55 | 87.9% | 6.64 |
| Compressed Air | 2,522 | | 2,217 | 0.35 | | 0.31 |
| Lighting | 1,890 | | 1,661 | 0.36 | | 0.31 |
| All Other | 425 | | 373 | 0.09 | | 0.07 |
| *Refrigeration* | *181* | | 159 | *0.02* | | 0.02 |
| *Motors* | *135* | | 119 | *0.02* | | 0.02 |
| *Building Shell* | *91* | | 80 | *0.04* | | 0.03 |
| *Water Heating* | *17* | | 15 | *<0.01* | | 0.00 |
| **Total Custom** | **16,427** | **87.9%** | **14,441** | **8.34** | **87.9%** | **7.33** |

Table 4-12 presents PY2019 last year ex post net demand impacts, by enduse and EUL category. The Standard Program accounted for 3.40 MW in the 10-14 year EUL category and 8.69 MW in the 15+ Year EUL category, while the Custom Program accounted for 1.36 MW in the 10-14 year EUL category and 5.97 MW in the 15+ Year EUL category. For both programs, the majority of ex post net savings are associated with the 15+ year EUL category.

Table 3-18. PY2019 Standard and Custom Program Annual Last Year Net Demand Impacts

| Enduse | Ex Post Gross (MW) | | NTGR | Ex Post Net (MW) | |
|---|---|---|---|---|---|
| | 10-14 | 15+ | | 10-14 | 15+ |
| **Standard Incentive Program** | | | | | |
| Lighting | 3.85 | 9.89 | 84.2% | 3.25 | 8.33 |
| Non-Lighting | 0.18 | 0.43 | | 0.15 | 0.37 |
| *Motors* | - | *0.24* | | - | *0.21* |
| *HVAC* | *0.17* | *0.18* | | *0.14* | *0.15* |
| *Refrigeration* | *0.01* | - | | *0.01* | - |
| *Water Heating* | - | *0.01* | | - | *0.01* |
| *Cooking* | *<0.01* | - | | *<0.01* | - |
| **Total Standard** | **4.04** | **10.32** | **84.2%** | **3.40** | **8.69** |
| **Custom Incentive Program** | | | | | |
| HVAC | 1.37 | 6.18 | 87.9% | 1.20 | 5.43 |
| Compressed Air | 0.03 | 0.32 | | 0.02 | 0.28 |
| Lighting | 0.13 | 0.22 | | 0.12 | 0.20 |
| All Other | 0.02 | 0.07 | | 0.02 | 0.06 |
| *Refrigeration* | *0.02* | *0.01* | | *0.02* | *<0.01* |
| *Motors* | - | *0.02* | | - | *0.02* |
| *Building Shell* | - | *0.04* | | - | *0.03* |
| *Water Heating* | - | *<0.01* | | - | *<0.01* |
| **Total Custom** | **1.55** | **6.79** | **87.9%** | **1.36** | **5.97** |

# 4. Small Business Direct Install Program

This chapter summarizes the PY2019 evaluation methodology and results for the Small Business Direct Install (SBDI) Program. Additional details on the evaluation methodology are presented in Chapter 0. Appendix D includes detailed desk review findings.

## 4.1 SBDI Evaluation Summary

The SBDI Program is designed to promote the installation of energy-efficient technologies in small businesses by removing barriers such as high upfront cost, lack of financing, lack of knowledge, and lack of time and resources to investigate energy efficiency opportunities.

In PY2019, the measures included in the program were lighting and smart thermostats.[20] The target market includes small non-residential customers with a Small General Service Rate 2(M), including commercial and institutional customers but excluding multifamily customers.

The SBDI Program encourages small business customer participation through a simple, immediate, and streamlined program process. A group of SBDI Program Service Providers delivers the energy-efficient measures at low-cost to small business customers. These Service Providers supply, install, and finalize paperwork for eligible participants, and are tasked with identifying additional energy efficiency opportunities not covered under the SBDI Program.

The PY2019 SBDI Program is an ongoing program from MEEIA Cycle II. Key design and implementation changes compared to PY2018 include an increase to the incentive cap from $2,500 to $3,500 (per Ameren Missouri customer per cycle). Standard Program incentive rates are used for incentive amounts above $3,500. The only notable mid-year change was the implementation of a 10% completion bonus aimed at giving participation rates a boost. The bonus went into effect on July 19, 2019 and was available to all BizSavers projects (with appropriate paperwork submitted by December 20, 2019).

### 4.1.1 Participation Summary

Table 7-3 presents PY2019 SBDI Program participation by measure category, including the number of participants, projects, and ex ante gross savings. Overall, 384 unique Ameren Missouri small business customers[21] implemented 452 projects through the program in PY20109, resulting in 6,385 MWh of ex ante gross energy savings.

Table 4-1. PY2019 SBDI Program Participation Summary

| Enduse | Participants | Projects | Ex Ante MWh |
|---|---|---|---|
| Lighting | 384 | 452 | 6,385 |

[20] Though smart thermostats were included in the list of program qualified measures, no installations appeared in the program-tracking data, so this evaluation focuses solely on lighting.
[21] Unique customers are defined at the company level, rather than the location level (i.e., a company that participated at more than one location is only counted once).

### 4.1.2 Key Impact Results

The SBDI Program was the third largest program in Ameren Missouri's Business Portfolio in PY2019, contributing 7% of first year ex post net energy savings and 5% of first year ex post net demand savings.

Table 4-2 summarizes first year and last year annual gross and net savings for the SBDI Program in PY2019. As shown, the program achieved 62% and 71%, respectively, of Ameren Missouri's first year net energy and demand savings goals, and 26% and 104%, respectively, of Ameren Missouri's last year net demand savings targets in the 10-14 Year EUL and 15+ Year EUL categories.

Table 4-2. PY2019 SBDI Savings Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| **First Year Savings** | | | | | | | |
| Energy Savings (MWh) | 6,385 | 96.8% | 6,181 | 87.8% | 5,427 | 8,702 | 62% |
| Demand Savings (MW) | 1.21 | 100.5% | 1.22 | 87.8% | 1.07 | 1.51 | 71% |
| **Last Year Savings** | | | | | | | |
| < 10 EUL (MW) | - | n/a | - | n/a | - | 0.01 | 0% |
| 10-14 EUL (MW) | 0.19 | 100.4% | 0.19 | 87.8% | 0.16 | 0.62 | 26% |
| 15+ EUL (MW) | 1.03 | 100.5% | 1.03 | 87.8% | 0.91 | 0.87 | 104% |

The PY2019 SBDI Program achieved gross RRs of close to 100% for first year energy and demand savings as well as last year demand savings in the 10-14 Year EUL category. The main driver of these RRs are small differences in ex ante and ex post assumptions for lighting measures, most notably waste heat factors, interactive factors, and hours of use.

The NTGR for the SBDI Program was 88%, including consideration of free ridership (13%) and participant spillover (0.6%).

### 4.1.3 Key Process Findings

The following summarizes the evaluation team's key findings from the evaluation by thematic topic. Details supporting each finding are provided in Section 4.3.1.

- **Customer Satisfaction**: Overall, Ameren Missouri is running the SBDI Program in a manner that suits customer needs and meets expectations. PY2019 participants are highly satisfied with their experience with the SBDI Program – this is the case for the program as a whole (93% "Very satisfied"), their Service Provider (92% "Very satisfied"), and all of nine program elements we inquired about (none rated less than 79% "Very satisfied").

- **Customer Experiences with the Service Providers**: Service Providers essentially *are* the SBDI Program. They not only locate and recruit participants, but they are also responsible for a wide range of other activities as part of the program. Overall, the current pool of Service Providers is doing a great job of meeting customer needs and expectations. Nearly all surveyed participants rated their Service Providers as "Very knowledgeable" (95%) and "Very helpful" (95%).

- **Service Provider Experiences with the Program**: The Service Providers are largely satisfied with the SBDI Program. Ameren Missouri appears to be effectively supporting Service Providers as the interviewed Service Providers reported feeling well prepared and supported to deliver the program.

- **Program Participation**: In PY2019, 38% of the 452 completed SBDI projects were undertaken by tenants, a notable share given typical challenges of energy efficiency programs in engaging non-owner occupants. On the provider side, the PY2019 network consisted of only 23 SBDI Service Providers who were primarily focused on a few business segments and on lighting. Expanding the Service Provider network will be necessary for maintaining and growing the program, especially as new measure types like HVAC measures are added to the program.

- **Drivers of and Barriers to Energy Efficiency Participation**: Not surprisingly, economic factors dominate the decision-making process when it comes to considering energy efficiency improvements in customer facilities. Thus, any efforts to increase incentive rates in a cost-effective manner will likely benefit the program. Incentives should also be a central component of any messaging. However, there are also other opportunities to affect energy efficiency customer decision-making, especially in areas such as increasing program awareness, educating customers about energy efficiency in general, and energy savings opportunities in specific.

- **Marketing**: There is an opportunity for Ameren Missouri to better market and promote the SBDI Program to customers. Such efforts should include better educating customers about energy efficiency and energy savings opportunities and steering more customers to SBDI and other BizSavers Programs, instead of relying predominantly on the Service Providers to find customers. Disseminating information can be done relatively inexpensively as customers prefer email for this type of information.

- **Customer and Service Provider Recommendations for Program Improvement**: Surveyed customers and interviewed Service Providers were provided opportunities to recommend improvements to the program. Few provided recommendations, but of those that did, including outdoor lighting measures and working to support greater customer awareness of the program rose to the top.

### 4.1.4 Conclusions and Recommendations

Based on the results of this evaluation, the evaluation team offers the following conclusions and recommendations for the SBDI Program:

- **Conclusion #1:** While Ameren Missouri is running a smooth program that satisfies customer and Service Provider needs and expectations, the PY2019 SBDI Program fell short of its annual energy savings and demand savings goals. It attained only 62% of the energy goal and 71% of the demand goal. Currently, the SBDI Program is essentially a lighting program. The addition of HVAC measures for PY2020 will be beneficial in increasing the breadth of offerings and potential depth of savings, but only if it is accompanied by sufficient incentive levels and Service Provider support.
  - **Recommendation:** Continue to expand the slate of program-eligible measures. Outdoor lighting is the only one that arose as a specific recommendation, but others likely offer potential.
- **Conclusion #2:** Currently, there are only 23 SBDI Service Providers, most of whom are primarily focused on a few facility types. Also, the current pool of Service Providers focuses almost exclusively on lighting. Expanding the Service Provider network will be necessary for maintaining and growing the program. Additional Service Providers will also be needed as new technologies get added to the program (e.g., HVAC).
  - **Recommendation:** Conduct strategic recruitment of additional Service Providers. When recruiting, focus on Service Providers with broader areas of focus (in terms of measures and/or facility types). Also aim to fill any geographic gaps and to ensure that denser areas are fully served.

- **Conclusion #3:** Recruitment of new customer participants will become increasingly difficult as the Service Providers continue capturing the "low-hanging fruit." New strategies will be needed to maintain or grow participation rates.
  - **Recommendation:** Increase customer-focused, strategic, targeted marketing to customers. This will not only help inform customers about energy efficiency opportunities but will help to steer customers to the program (in contrast to relying solely on Service Providers to locate them).
- **Conclusion #4:** The overall impact of the mid-year addition of the 10% completion bonus is hard to detect when examining project starts, but it is clear that it did positively affect some projects. Of the surveyed customers who did recall the bonus, when asked directly about its influence on their project, about one-third (32%) said that the scope of the project would have been smaller, just over one-quarter (27%) said the project would have been completed at a later date, and about one-tenth (9%) said the equipment would have been less efficient.
  - **Recommendation:** Completion bonuses can be used to stimulate participation, but expectations regarding their overall impacts should be conservative That said, they do have the ability to accelerate projects or increase the size of them; much less ability to positively affect the efficiency of the equipment.

## 4.2 SBDI Evaluation Methodology

Table 6-3 provides an overview of the PY2019 evaluation activities for the SBDI Program. Most of these activities are similar across the various business programs and were described in Chapter 0. The sections following the table highlight program-specific aspects of key evaluation activities.

Table 4-3. PY2019 Evaluation Activities for the SBDI Program

| Evaluation Activity | Description |
|---|---|
| Program Manager and Implementer Interviews | ▪ Conducted interviews (1) prior to program launch to inform evaluation activities and (2) towards the end of PY2019 to understand program staff's perspective on program performance. |
| Program Material Review | ▪ Reviewed program materials to inform evaluation activities. |
| Tracking System Review | ▪ Reviewed implementer's tracking system to ensure that data required for the evaluation is being collected. |
| Participant Survey | ▪ Conducted survey with program participants to collect data to inform NTG (free ridership and participant spillover) and yield process-related insights. |
| Service Provider Interviews | ▪ Conducted interviews with program Service Providers to yield process-related insights. |
| Engineering Database Review | ▪ Reviewed program database to check that program data are complete and that program-installed measures meet all program requirements. |
| Engineering Desk Reviews | ▪ Reviewed supporting project documentation for a sample of projects to ensure that original data was correctly entered from invoices and other documentation.<br>▪ Developed ex post savings for the sample and the population. |
| Attribution/Net Impact Analysis | ▪ Developed estimates of free ridership and participant spillover.<br>▪ Estimated PY2019 net impacts. |

## Participant Survey

In January 2020, the evaluation team conducted an online survey with Ameren Missouri business customers who participated in the SBDI Program during PY2019. The survey covered a range of topics aimed at addressing the program research objectives (provided in Chapter 0) including sources of program information, barriers to energy efficiency and participation in the program, participant satisfaction, and free ridership and participant spillover.

The survey sample was designed to develop a single estimate of free ridership for the SBDI program. To ensure sufficient coverage of larger projects, we stratified the sample by project size (in terms of ex ante kWh). While the sampling unit for this survey was the unique customer contact, the FR questions had to be asked about a specific project completed by that customer. Because some customers had completed more than one project during PY2019, sometimes across more than one BizSavers program, our sampling approach prioritized projects in programs and strata with fewer available sample points, i.e., smaller programs and larger projects were prioritized.

After processing the program data to account for customers with multiple projects, the resulting sample frame for the participant survey included 289 customers. We invited all 289 program participants to participate in the survey via email (i.e., we attempted a census), sending an initial invitation and two reminders. The initial invitation resulted in 39 bounced emails. We removed these email addresses from the sample frame to give us a total of 250 valid sample points. Overall, a total of 81 SBDI participants responded to the survey, for a response rate of 32%.

To assess potential response bias and the need for weighting, the evaluation team compared key information available for both the sample and the population (i.e., facility type, project size, and facility ownership). While we observed small differences, we concluded that survey respondents were representative of the population and that survey weights were not necessary.

## Service Provider Interviews

In January 2020, we conducted in-depth interviews with SBDI Service Providers who participated in the SBDI Program during PY2019. The primary purpose of the interviews was to collect data to support the process analysis, covering topics such as experiences with the program, satisfaction with the program, sales practices, and recommendations for improvements.

A total of 23 Service Providers participated in the SBDI Program in PY2019. To capture the natural diversity of participating SBDI Service Providers, we sampled a mix of Service Providers who completed relatively few projects and Service Providers who completed multiple projects. Since some SBDI Service Providers also participated in other BizSavers programs that had market partner research around the same time, the evaluation team developed a sample frame of 16 SBDI Service Providers, excluding five who were interviewed for the BSS evaluation and two who were included in the online survey for the Standard Incentive Program. We reached out to all 16 Service Providers and conducted 9 in-depth interviews.[22] Table 4-4 provides an overview of the interviewed SBDI Service Providers.

[22] In addition to these 9 interviews, we leveraged information from one Service Provider interviewed for the BSS evaluation who also provided input on the SBDI Program.

Table 4-4. Summary of Interviewed SBDI Service Providers

| Service Provider | Company Role | Equipment Specialty | Entry Year into SBDI Program | Business Locations | Employees | Number of Projects | Project Volume Trend in PY2019 |
|---|---|---|---|---|---|---|---|
| 1 | Owner | Lighting | 2018 | 2 | < 10 | 5-10 | Decrease |
| 2 | Owner | LED Lighting | 2018 | 1 | 10 – 25 | >10 | Stable |
| 3 | Owner | Electrical | 2018 | 1 | < 10 | 5-10 | Decrease |
| 4 | Owner | LED Lighting | 2016 | 1 | < 10 | >10 | Stable |
| 5 | Owner | Lighting | 2016 | 4 | > 50 | >10 | Increase |
| 6 | Vice President | Electrical | 2016 | 2 | < 10 | 5-10 | Decrease |
| 7 | Vice President of Sales | Lighting | 2016 | 1 | < 10 | <5 | Decrease |
| 8 | CFO | Lighting | 2016 | 1 | 10 – 24 | <5 | Stable |
| 9 | CEO | Lighting | 2016 | 1 | 25 – 49 | <5 | Decrease |

## Engineering Desk Reviews

We conducted engineering desk reviews for a sample of 60 SBDI projects to review and verify savings assumptions. The main purpose of the desk reviews was to verify that the program-tracking database correctly reflects the installed measure(s), including measure type, measure quantity, and key inputs into the savings algorithm such as baseline and efficient wattages, hours of use, waste heat and interactive factors, and heating penalties.

In PY2019, only lighting measures received an incentive through the SBDI Program. As such, we did not stratify the desk review sample by technology. However, we did stratify by ex ante energy savings, dividing the population of projects into three strata, where each stratum included approximately one-third of population savings.[23] Table 2-1 summarizes the sampling strategy for the SBDI desk reviews.

Table 4-5. SBDI Desk Review Sampling Summary

| Stratum | Number of Projects | | 1st Year Ex Ante Savings (kWh) | | |
|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | % Sampled |
| 1 | 300 | 24 | 1,916,661 | 119,379 | 6% |
| 2 | 103 | 13 | 2,143,745 | 272,481 | 13% |
| 3 | 49 | 23 | 2,324,430 | 1,206,034 | 52% |
| **TOTAL** | **452** | **60** | **6,384,836** | **1,597,894** | **25%** |

Based on the results of the desk reviews, we developed program-level realization rates for first year energy and demand savings. We developed these by aggregating the project-level results from the desk reviews, applying weights that reflect (1) the relative size of each project within the sample and (2) the probably of each project to be sampled. The program-level realization rates were then used to adjust the ex ante savings for the population of program projects.

[23] Because we sampled and set stratum boundaries before all PY2019 projects were finalized, the final savings allocation by stratum does not fully match the targeted one-third allocation to each stratum.

### NTGR Analysis

The NTGR analysis for the PY2019 SBDI Program included estimation of FR and PSO, based on responses to the participant survey. We estimated both FR and PSO at the program-level. The NTGR for the SBDI Program was calculated as follows:

$$NTGR = 1 - FR + PSO$$

The methods used for calculating FR and PSO are summarized in Chapter 0 and are further detailed in Appendix A.

## 4.3 SBDI Evaluation Results

### 4.3.1 Process Results

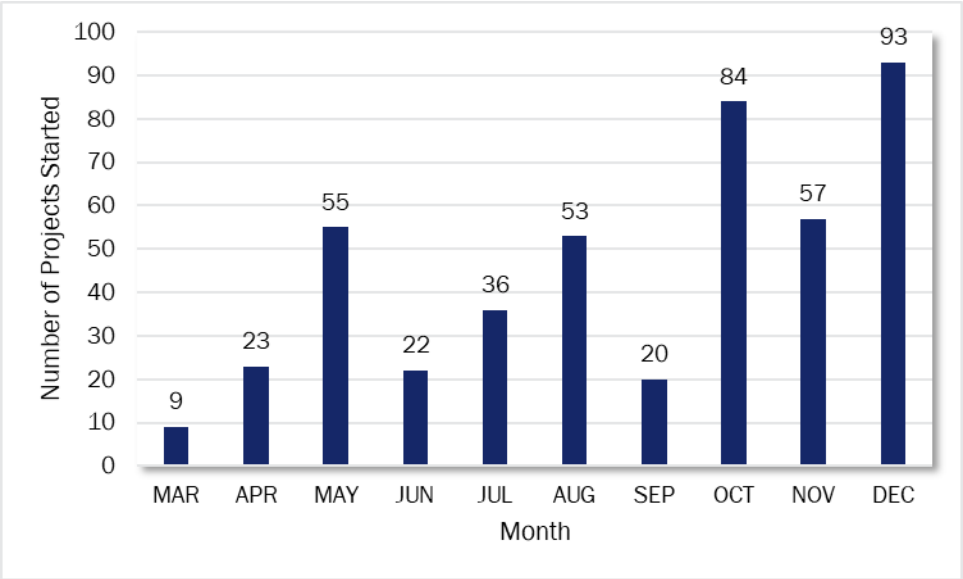
The results of the PY2019 SBDI process evaluation are based on a survey with program participants and interviews with eight SBDI Service Providers. The results are presented in the following subsections:

- Program Participation
- Drivers of and Barriers to Energy Efficiency and Program Participation
- Customer Experiences with the Service Providers
- Service Provider Experiences with the Program
- Marketing
- Customer Satisfaction
- Customer and Service Provider Recommendations for Program Improvement

### Program Participation

During PY2019, 384 unique small business customers completed a total of 452 lighting projects through the SBDI Program. Figure 4-1 shows that program activity fluctuated throughout the year with the greatest number of projects started in December (*n*=93) and October (*n*=84) and the fewest in March (*n*=9) and September (*n*=20).

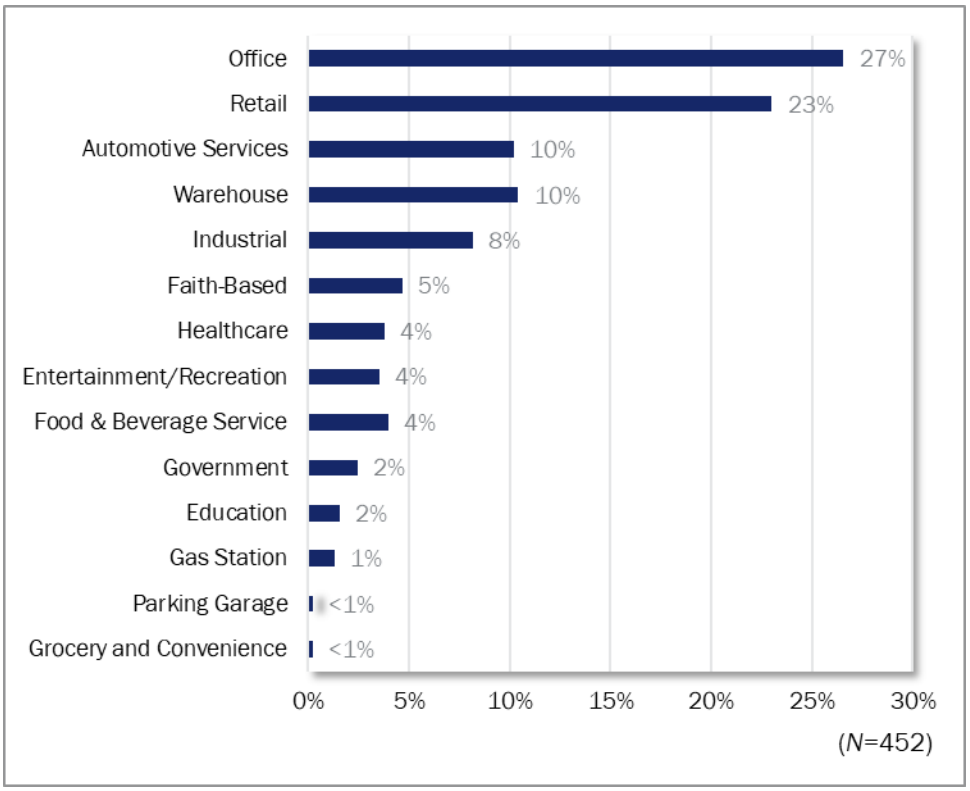
Figure 4-1. PY2019 SBDI Program Monthly Project Starts




A typical challenge with small business energy efficiency programs is the tenancy issue, i.e., non-owner occupants tend to participate in energy efficiency programs at much lower rates than owner occupants. While the majority of PY2019 SBDI participants (62%) are owner occupants, the fact that over one-third of all PY2019 program activity was associated with tenants is notable. This is likely due to the program focus on ease of participation (fast-track, direct install) as well as the program's singular focus on lighting, which tenants are often responsible for maintaining and adapting to their needs.

In addition to the mix of owners and tenants, it is also instructive to investigate the reach of the program with respect to building type. Based on the program-tracking data, most of the SBDI Program activity (60% of projects) is concentrated in just three segments: offices (27%), retail (23%), and warehouse (10%; see Figure 4-2). This is consistent with information provided by interviewed Service Providers, almost all of whom (9 of 10) indicated that their companies generally serve a limited mix of building types, which primarily includes retail, offices, and warehouses.

Figure 4-2. PY2019 SBDI Projects by Building Type




These results suggest that the Service Provider network may be too limited and could benefit from broadening their target market. The Service Provider network is responsible for generating their own leads. Thus, the breadth of the network affects the facility types served by the program. But the composition of the network also affects the type of measures addressed by the program. Of the 10 Service Providers with whom we spoke, seven indicated their area of specialization was only lighting. The program plans to offer more HVAC measures in PY2020,[24] and such an expansion will require Service Providers with HVAC expertise. Further, the size and composition of the network might also constrain the program's ability to meet its energy and demand targets. In PY2019, only 23 SBDI Service Providers covered the entire Ameren Missouri service territory. Serving a wider range of facility types more intensively and growing the program will likely require additional Service Providers. However, any new recruitment should be done strategically.

Another avenue of increasing program participation might be additional marketing and outreach to small business customers directly by the program. SBDI Service Providers are currently the main vehicle of recruiting participants but are limited by the constraints discussed above. While the implementer has expended significant effort into marketing and promoting the PY2019 BizSavers Programs – by offering a wide range of trainings/seminars, promotional check presentations, email campaigns, and attendance at various meetings, events and tradeshows throughout the year – all of these efforts have been directed at trade allies/Service Providers, with relatively little marketing targeted at customers. A key recommendation throughout this report is to increase customer-focused strategic marketing and promotion: If more can be done to steer customers

[24] Program documentation circulated in PY2019 indicates that the SBDI Program offerings will be expanded in PY2020 to include high efficiency packaged or split systems, advanced rooftop unit controls, and demand control ventilation.

to the program (in contrast to having Service Providers locate and recruit customers) the more the SBDI Program will benefit.

While the above recommendations might help increase program participation going forward, the program did use two strategies in PY2019 to promote participation in the SBDI Program:

- **Incentive Cap.** Effective at the beginning of PY2019, the program increased the incentive cap from $2,500 to $3,500. The majority of interviewed Service Providers (7 out of 9) reported that less than half of walk-throughs conducted for potential program participants result in total energy savings opportunities that would require going above the new $3,500 incentive cap, so it does appear that the increased cap has had a positive impact.[25] In instances where upgrades would exceed the incentive cap, the interviewed Service Providers reported encouraging customers to take advantage of BizSavers Standard incentives.[26]
- **Bonus Incentive.** Another strategy to increase participation, used by the program implementer across all BizSavers programs, was to offer a 10% completion bonus in the middle of the program year. This bonus was introduced on July 19 and applied to all BizSavers projects completed (and paperwork submitted) on or before December 20, 2019. Figure 4-1 (above) showed monthly starts of SBDI projects. While participation shows a spike in August and a general increase in program activity in every month after the new completion bonus was implemented (except September), there is also a lot of variability in monthly program activity prior to the introduction of the bonus. Thus, it is hard to draw a conclusion about the impact of the completion bonus based solely on program-tracking data.

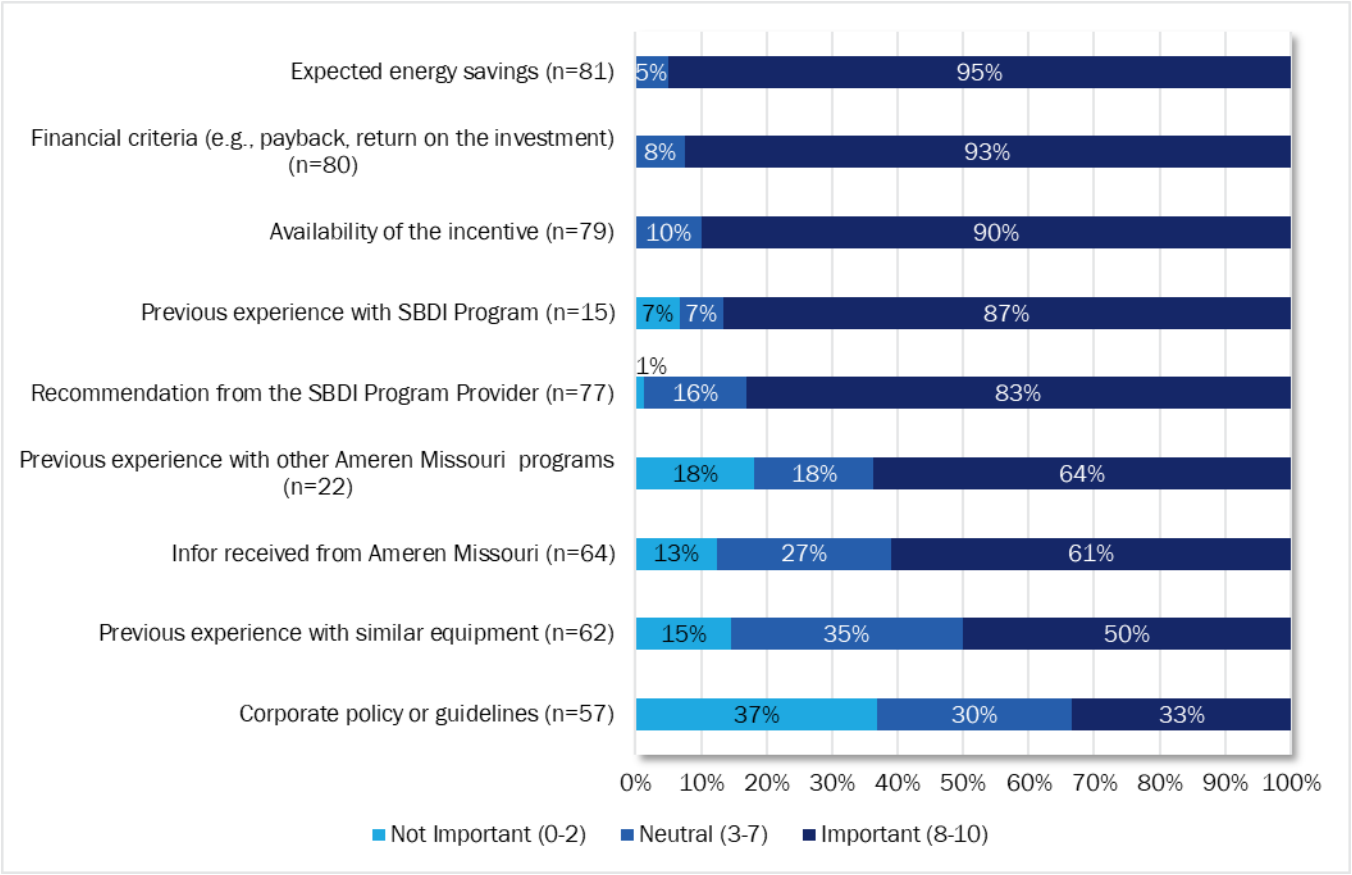
  Interestingly, of the respondents who received the 10% bonus (n=53), less than half (40%) were even aware that their incentive included the bonus. It may be that Service Providers were just incorporating the additional bonus into the overall invoice; otherwise, it is difficult to understand how the bonus could have impacted the customers' decision. However, for surveyed customers who did recall the bonus, when asked directly about its influence on their project, about one-third (32%) said that the scope of the project would have been smaller, just over one-quarter (27%) said the project would have been completed at a later date, and about one-tenth (9%) said the equipment would have been less efficient. It therefore appears that the completion bonus did have a positive impact on many PY2019 projects, even though many customers were not aware of it.

[25] Unfortunately, we do not have information on what proportion of projects would have exceeded the old cap.
[26] That said, only 36% of surveyed participants reported getting information on other Ameren Missouri programs or incentives (see Figure 4-6).

## Drivers of and Barriers to Energy Efficiency and Program Participation

Not surprisingly, economic factors dominate the decision-making process when it comes to considering energy efficiency improvements in customer facilities. Figure 4-3 shows respondent ratings of the importance of various factors in their decision to select energy efficient equipment, rather than a less efficient alternative.[27] The three most important factors are economic factors, including the expected energy savings (95% 8-10), financial criteria such as payback period or return on investment (93% 8-10), and the available incentive (90% 8-10). Notably, 39% of the surveyed customers said the incentive was the *most* important factor affecting their decision, and of those who rated financial criteria an 8 or higher, 77% said that the Ameren Missouri SBDI Program incentive moved the project within the acceptable range of their financial criteria. In addition to economic factors, Service Provider recommendations play an important role (83% 8-10).

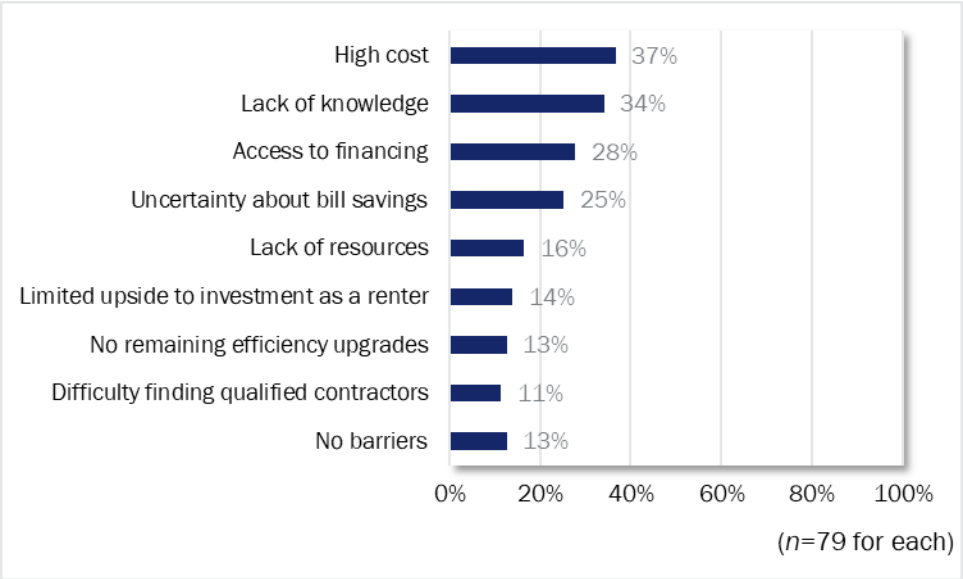
Figure 4-3. Reasons for Selecting Energy Efficient Equipment Rather than Less Efficient Equipment




Consistent with the importance of economic factors in decision-making, surveyed SBDI customers consider the high cost of energy efficient equipment (37%) and the lack of access to financing (28%) key barriers to making energy efficiency improvements at their facility (see Figure 4-4). In addition, their own lack of knowledge of energy efficient options is an important barrier to many small businesses (34%).

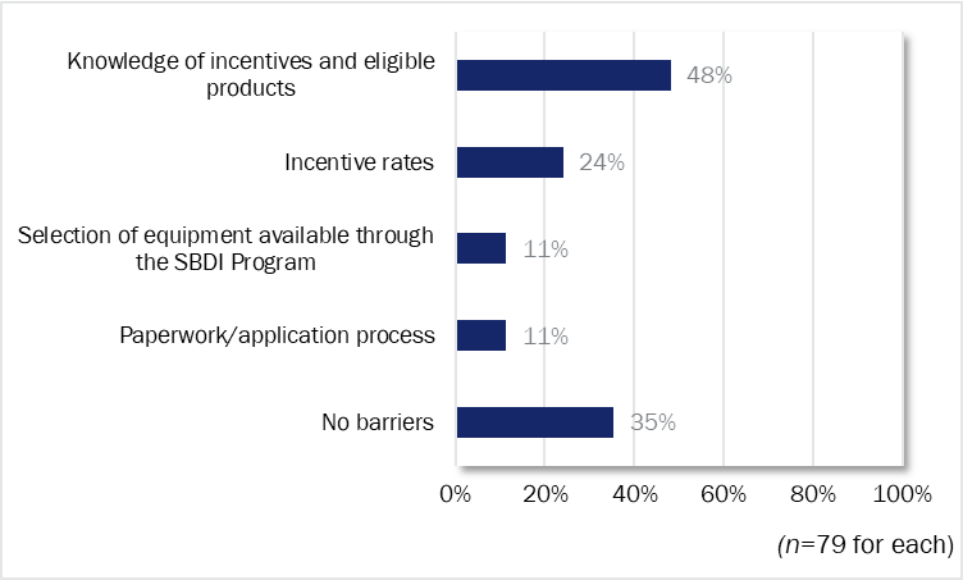
[27] This question was asked on a scale of 0 to 10, where 0 means "Not at all important" and 10 means "Extremely important". These questions are a key input into the free ridership algorithm (see Section 4.3.3).

Figure 4-4. Customer Barriers to Making Energy Efficiency Improvements




Barriers to participating in the SBDI Program itself are informational and economic (see Figure 4-5). Lack of knowledge of incentives and eligible products (48%) was the most commonly mentioned barrier, followed by the incentives rates (24%). Notably, 35% of interviewed participants did not see any barriers to participation, suggesting that the program has done a good job of making the participation process easy for customers.

Figure 4-5. Customer Barriers to Completing Projects through SBDI Program




Notably, twice as many respondents see information barriers compared to economic barriers. This suggests that for many customers, the program has succeeded in overcoming the cost hurdle *once the customer knows about the program and its benefits*. As already discussed above, this suggests there is an opportunity for the program to increase the reach of the program and generate leads through additional customer-directed

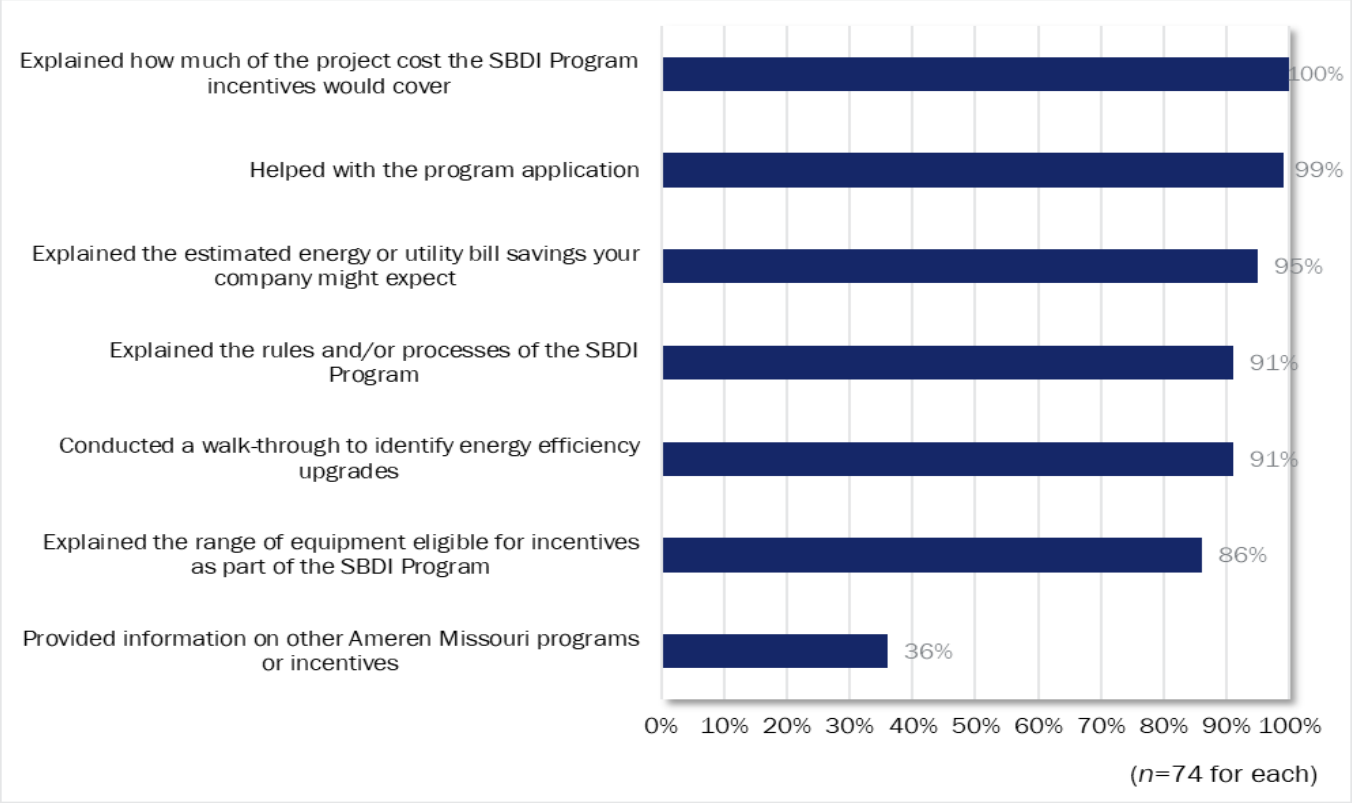
outreach. For example, marketing collateral focusing on energy savings education and available opportunities could prove useful for helping to address some of the customer barriers by steering customers to BizSavers programs like the SBDI Program.

Incentive levels – i.e., upfront cost, even though the incentive is designed to reduce it – as the second highest barrier aligns with information provided by interviewed Service Providers who all reported that the primary barrier for their small business customers to both making energy efficiency improvements and participating in the SBDI Program is upfront cost. As such, well-calibrated incentive levels are of key importance to the successful engagement of small business customers in the SBDI Program. Interestingly, interviewed Service Providers reported that the percentage of installed costs that the incentives cover varies greatly, ranging from 15% to 60% of a project's installed costs. That percentage is reportedly affected by a range of factor including the size and cost of a job, the type of measures involved, the cost of materials, and because the program has been focused almost exclusively on lighting, the type of existing fixtures.

## Customer Experiences with Service Providers

Surveyed customers indicated that their Service Providers helped them with a range of program-related tasks such as explaining the percentage of project costs that the SBDI Program would cover (100%), assisting with the application (99%), explaining the estimated energy and bill savings they could expect (95%) and the rules and processes of the program (91%), conducting a walkthrough (91%), and explaining the range of eligible equipment (86%; see Figure 4-6). Significantly fewer participants (36%) are informed of other BizSavers programs that they may be eligible for, potentially indicating a missed opportunity, given that the PY2019 SBDI Program was primarily focused on lighting equipment.

Figure 4-6. Ways in which Service Providers Helped Customers



Overall, customers are quite satisfied with their Service Providers (92% very satisfied). They consider their Provider very helpful in supporting them through the participation process (95%) and very knowledgeable about the SBDI Program (93%). No obvious areas for improvement in terms of how the Service Providers are supporting and interacting with customers arose from the customer surveys. However, more could be done to make customers aware of other BizSavers opportunities.

### Service Provider Experiences with the Program

None of the interviewed Service Providers indicated any difficulty or dissatisfaction with the process of applying to become an approved SBDI Service Provider. All interviewed Service Providers reported receiving some degree of training on the SBDI Program, and they found the training and information to be both useful and straightforward and thought that it prepared them well to deliver the program. Notably, none had any recommendations for making the training more useful.

In addition, all interviewed Service Providers indicated that they were satisfied with the support and communication they have received from Ameren Missouri program staff. Approximately half of these Service Providers (4 of 9) reported receiving printed brochures for marketing the SBDI Program. All found the materials to be a useful tool for marketing and selling the program.[28]

Overall, most Service Providers (7 out of 9) reported that they were satisfied with their experiences with the program. Of the two who indicated dissatisfaction, one commented that there is a need for an approved product list (see also discussion below), the other reported that he had experienced a decline in interest for the program from his customers and has difficulty generating leads under the current incentive levels.

### Marketing

The BizSavers Program was widely marketed and promoted in the Ameren Missouri service territory in PY2019. Key outreach activities throughout the year included:

- Hosted meetings, trainings, and seminars
- Check presentations to some of the larger program participants
- Website enhancements
- BizSavers email campaigns
- Media/press releases
- Attendance/presentations at meetings, events and trade shows

However, the vast majority of these efforts targeted trade allies and Service Providers; relatively little has been designed for and targeted directly to small business customers.

Marketing and promotional efforts aimed at customers would aid existing Service Providers. To-date the program has largely served the easier-to-reach and easier-to-service business customers. As it matures and finding recruits becomes more challenging, customer-focused, strategic, targeted marketing and promotions could prove useful in raising awareness and steering customers to the program.

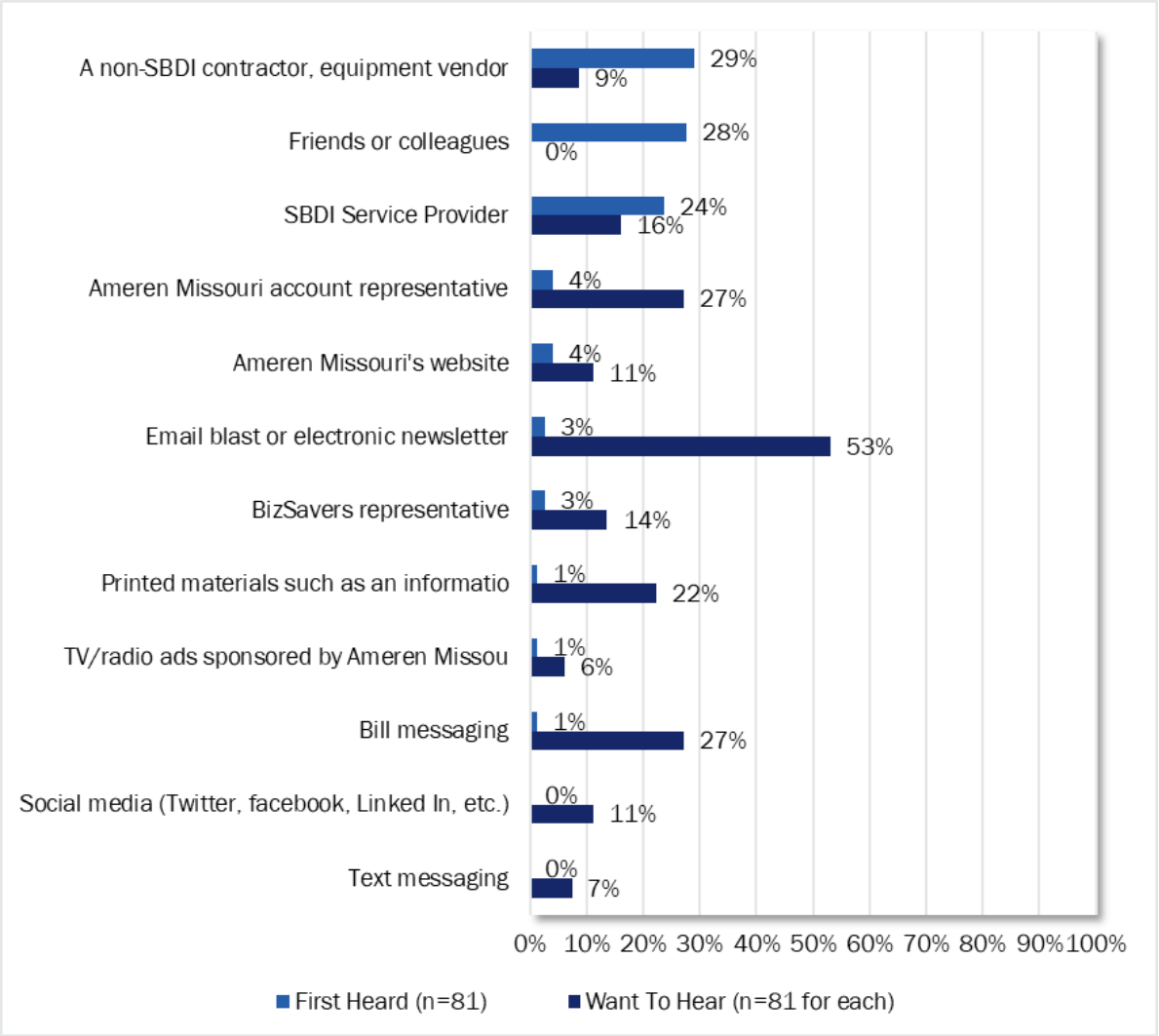
[28] It is worth noting that the Service Providers who reported not receiving printed materials (5 of 9) all indicated a desire for them, especially ones that could be co-branded with Ameren and the Service Providers' respective companies.

A potential outreach strategy emerges from Figure 4-7, which correlates how responding participants first heard about the BizSavers SBDI Program with how they would like to hear about energy efficiency opportunities. About half of surveyed SBDI Program participants heard about the program through a contractor (53%), either a SBDI Service Provider (24%) or through an unaffiliated contractor/equipment vendor (29%). This aligns with the Service Provider interviews, where most (8 out of 9) reported that no more than half of their customers were aware of the SBDI Program prior to their Service Provider mentioning it to them. This is understandable as the program is currently predominantly a Service Provider-driven program. However, it is not clear why additional contractors are not vying to become SBDI Service Providers if there are apparent opportunities which require them to refer customers to other contractors.

However, Figure 4-7 also points to some notable opportunities. The surveyed Ameren Missouri SBDI Program participants indicated that they prefer to hear about energy savings opportunities via email blasts, account representatives,[29] on-bill messaging, and other printed materials such as an informational brochure or fact sheet. Leveraging relatively lower-cost alternatives such as email campaigns that target customers with unique characteristics or geography quickly and relatively inexpensively could prove effective at increasing customer awareness and education.

[29] As the small business customers that are eligible for this program typically do not have account representatives, we interpret this result to mean that customers would like to hear about opportunities from Ameren Missouri representatives in general.

Figure 4-7. How Customers First Heard of the Program Versus How They Would Like to Hear About Energy Efficiency Opportunities




Ameren Missouri should also continue to create and distribute printed co-branded brochures as a marketing material for the SBDI Program. However, the communication and distribution of these materials could be better streamlined to ensure all Service Providers are aware of the materials and have access to them (see Footnote 28). We also recommend dedicating effort to communicating changes to program paperwork and processes to Service Providers before they occur (see discussion below).

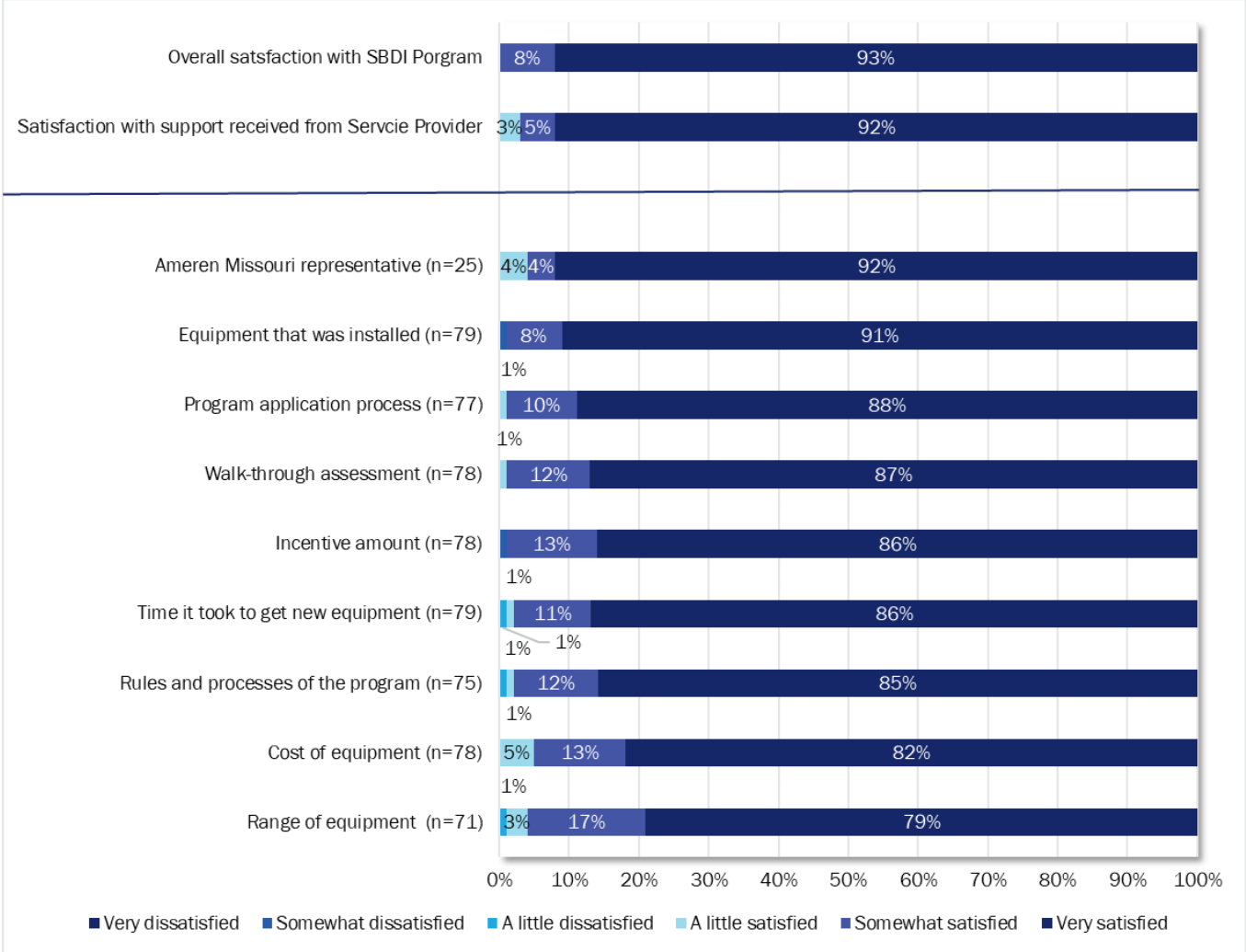
## Customer Satisfaction

Overall, customers are quite satisfied with the SBDI Program in PY2019. The vast majority (93%) rated themselves very satisfied with the Ameren Missouri SBDI Program as a whole; the remaining participants rated

themselves somewhat satisfied (8%).[30,31] Nobody provided a lower score (see Figure 4-8). Customers are also rather satisfied with the SBDI Service Providers, with the vast majority (92%) providing a "very satisfied" rating.

To help identify program processes or other aspects of the program that Ameren Missouri could improve in the future, the evaluation team also asked participating customers about their level of satisfaction with various elements of the SBDI Program. Overall, there is not a lot of room for improvement. Figure 4-8 shows that surveyed SBDI Program participants were quite satisfied with all elements of the program that we inquired about – none less than 79% very satisfied; none less than 95% somewhat or very satisfied.

Figure 4-8. Customer Satisfaction with Elements of SBDI Program




When probing specifically about areas of dissatisfaction, only a handful of the 81 survey respondents provided any input:

[30] Note that the two values do not sum to 100% due to rounding.
[31] This satisfaction question was asked on a six-point scale that included "Very satisfied," "Somewhat satisfied," "A little satisfied," "A little dissatisfied," "Somewhat dissatisfied", and "Very dissatisfied."

- Two customers indicated that they were dissatisfied that the rules excluded exterior lighting.
- Another was disappointed because they lost out on an incentive they attributed to slow processing of the applications.
- One customer had a bad experience with their lights as they burnt out in a short time after installation.
- A final customer was unhappy about the time of installation, as their installation occurred 15 months after the initial walk-through.

However, none of these issues appeared endemic and all seemed to be isolated incidents.

### Customer and Service Provider Recommendations for Program Improvement

In the participant survey and Service Provider interviews, the evaluation team followed-up on responses showing dissatisfaction to collect more information on the reason. In addition, final survey questions invited respondents to provide any "other" recommendations for improving the program in general. While both surveyed participants and interviewed Service Providers were largely satisfied with their experiences and had very few recommendations for improvements, the following items were mentioned. It is worth noting that these recommendations arise from open-ended questions and thus often are singular recommendations, only mentioned by one, a couple, or a few respondents.

- For the most part, customers and Service Providers reported that the selection of measures offered through the SBDI Program meets the needs of the target customers. However, some surveyed customers (9%) brought up the desire to include prescriptive incentives for exterior lighting. Multiple Service Providers (5 of 9) also indicated that small business customers would benefit from receiving incentives on exterior lighting and higher incentives for smart thermostats. A couple Service Providers also pointed to this issue as a reason that customers such as car washes and parking garages are largely absent from the program.
- Some surveyed customers (10%) felt that the program could be improved by providing more information and creating awareness about this and other programs being offered by Ameren Missouri.
- One Service Provider suggested that the training was useful but could have had more emphasis on how to identify eligible customers for participation in the program.
- One Service Provider was frustrated by needing to change or restart a Fast-Track application because changes to the application occurred without notification. The Service Provider noted that notifying them ahead of time about planned changes would be appreciated.
- One Service Provider felt there are other Service Providers taking advantage of the program by offering an inferior product at a lower cost. Therefore, this Service Provider suggested establishing an "Approved Product List" in order to deter Service Providers from undercutting each other on product cost and therefore providing customers with an inferior product and program experience.

## 4.3.2 Gross Impact Results

This section summarizes gross impact results for the PY2019 SBDI Program. Ex post gross savings are based on desk reviews for a sample of 60 SBDI projects, extrapolated to the population.

Table 4-6 compares ex ante and ex post first year and last year gross savings, at the program level. As shown, the program achieved first year ex post gross energy and demand savings of 6,181 MWh and 1.22 MW, respectively, as well as last year ex post demand savings of 0.19 MW in the 10-14 Year EUL category and 1.03 MW in the 15+ Year EUL category.

Table 4-6. PY2019 SBDI Gross Impacts

| | Ex Ante Gross | Gross RR | Ex Post Gross |
|---|---|---|---|
| **First Year Savings** | | | |
| Energy Savings (MWh) | 6,385 | 96.8% | 6,181 |
| Demand Savings (MW) | 1.21 | 100.5% | 1.22 |
| **Last Year Savings** | | | |
| < 10 EUL (MW) | - | n/a | - |
| 10-14 EUL (MW) | 0.19 | 100.4% | 0.19 |
| 15+ EUL (MW) | 1.03 | 100.5% | 1.03 |

First and last year demand gross RRs for the SBDI Program were close to 100%, while the first year energy gross RR was slightly lower, at 97%. Based on the desk reviews, we made the following adjustments to ex ante savings assumptions:

- **Waste Heat Factor (WHF) and Heating Penalty Interactive Factor (IF).** To calculate ex ante savings for all LED measures, the program implementer applies a modeled Heating and Cooling Interaction Factor (HCIF) of 1.07, encompassing waste heat factors and heating penalties (referred to as IF in the Ameren Missouri TRM). In contrast, the evaluation team applied building-specific WHFs and IFs for the sampled SBDI projects, based on project documentation and in accordance with the Ameren Missouri TRM. Based on our analysis, ex post WHFs ranged from 1.00 to 1.12 with an average value of 1.08 across all 60 sampled projects. In addition, 12 of the 60 sampled sites were identified as having electric heating, with a range of IFs from -0.24 to 0, resulting in an average across all sampled projects of -0.049. Differences in application of the WHF and IF are the primary driver of the lower RR for energy savings.

- **Hours of use (HOU).** We confirmed HOU values in the program-tracking database through a review of project documentation and published business hours, where needed. This resulted in adjustments to 12 of the 60 sampled projects (8 with a decrease and 4 with an increase in HOU). Combined, the 12 projects received an average HOU change of -2.5%, ranging from -48% to +75%. The overall average adjustment across all 60 sampled projects was -0.5%.

Table 4-7 presents ex ante and ex post last year gross demand impacts by measure type and EUL category. As shown, the majority (85%) of last year demand savings comes from the 15+ Year EUL category, with T12 replacements accounting for the largest share. All last year demand RRs exceed 100%.

Table 4-7. PY2019 SBDI Program Annual Last Year Gross Demand Impacts

| Measure Category/End-Use | 10-14 Year EUL | | | 15+ Year EUL | | |
|---|---|---|---|---|---|---|
| | Ex Ante (MW) | Gross RR | Ex Post (MW) | Ex Ante (MW) | Gross RR | Ex Post (MW) |
| LED Replacing T12 | <0.01 | 100.5% | <0.01 | 0.73 | 100.5% | 0.73 |
| Other Linear LED | <0.01 | 100.5% | <0.01 | 0.26 | 100.5% | 0.27 |
| Other Non-Linear LED | 0.18 | 100.4% | 0.18 | 0.01 | 103.1% | 0.01 |
| LED Replacing Incandescent A-Lamp | - | n/a | - | 0.03 | 100.5% | 0.03 |
| LED Exit Sign | - | n/a | - | <0.01 | 100.5% | <0.01 |
| **Total** | **0.19** | **100.4%** | **0.19** | **1.03** | **100.5%** | **1.03** |

### 4.3.3 Net Impact Results

#### Net-to-Gross Results

The evaluation team conducted research with 81 SBDI Program participants to develop the NTGR for PY2019. We estimate the program-level NTGR to be 87.8%, comprised on a level of FR of 12.8% and PSO of 0.6%. Table 4-8 presents the individual NTG components (i.e., FR and PSO) and the resulting NTGR. The NTGR is calculated as 1 – FR + PSO.

Table 4-8. Summary of SBDI NTG Results

| Program | Free Ridership | Participant SO | NTGR [a] |
|---|---|---|---|
| SBDI | 12.8% | 0.57% | 87.8% |

[a] NTGR = 1 – FR + PSO

#### Free Ridership

A total of 72 participants provided valid responses to the FR questions in the participant survey and were included in the FR analysis.[32] Using the algorithm summarized in Chapter 0, we estimate program-level FR to be 12.8%.

We attempted a census of unique project contacts for this program. As such, the concept of sampling precision does not apply. Table 4-9 summarizes the FR estimate for SBDI.

Table 4-9. Summary of FR Estimate

| Program | n | Free Ridership |
|---|---|---|
| SBDI | 72 | 12.8% |

Participants' free ridership-related survey responses show the following:

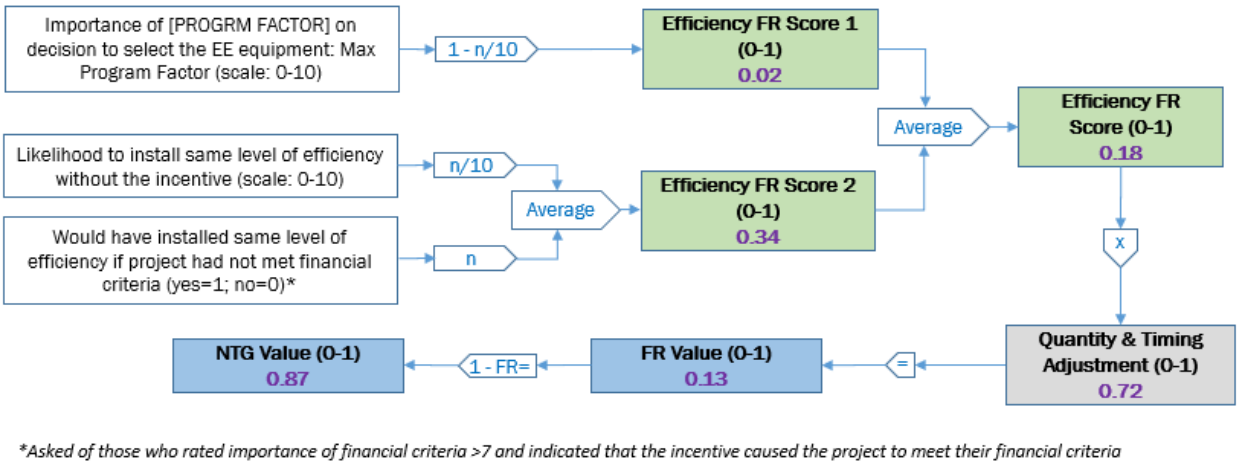
- **Efficiency:** Interviewed participants generally reported a high degree of program influence on the efficiency level of their projects, resulting in a savings-weighted Efficiency FR Score of 0.18.

[32] An additional nine respondents were excluded from the FR analysis due to incomplete or unreliable responses (e.g., straight-lining).

- **Quantity:** The program had a significant influence on the scope of many incented projects. Respondents reported that 61% of the incented measures would not have been installed at the same time without the program.
- **Timing:** Similar to the program's influence on quantity, participants reported that the program was responsible for accelerating their projects. The resulting timing adjustment factor, applied to the quantity that participants would not have installed at the same time without the program, was 0.48.[33]
- **Quantity and Timing Adjustment:** Combining the responses to the quantity and timing questions resulted in overall Quantity and Timing Adjustment of 0.72, meaning that the program can claim credit for 28% (1 – 0.72 = 0.28) of savings that would be considered free rider savings based on efficiency alone.

The following figure summarizes FR results for SBDI participants.

Figure 4-9. SBDI Free Ridership Results




**Asked of those who rated importance of financial criteria >7 and indicated that the incentive caused the project to meet their financial criteria*

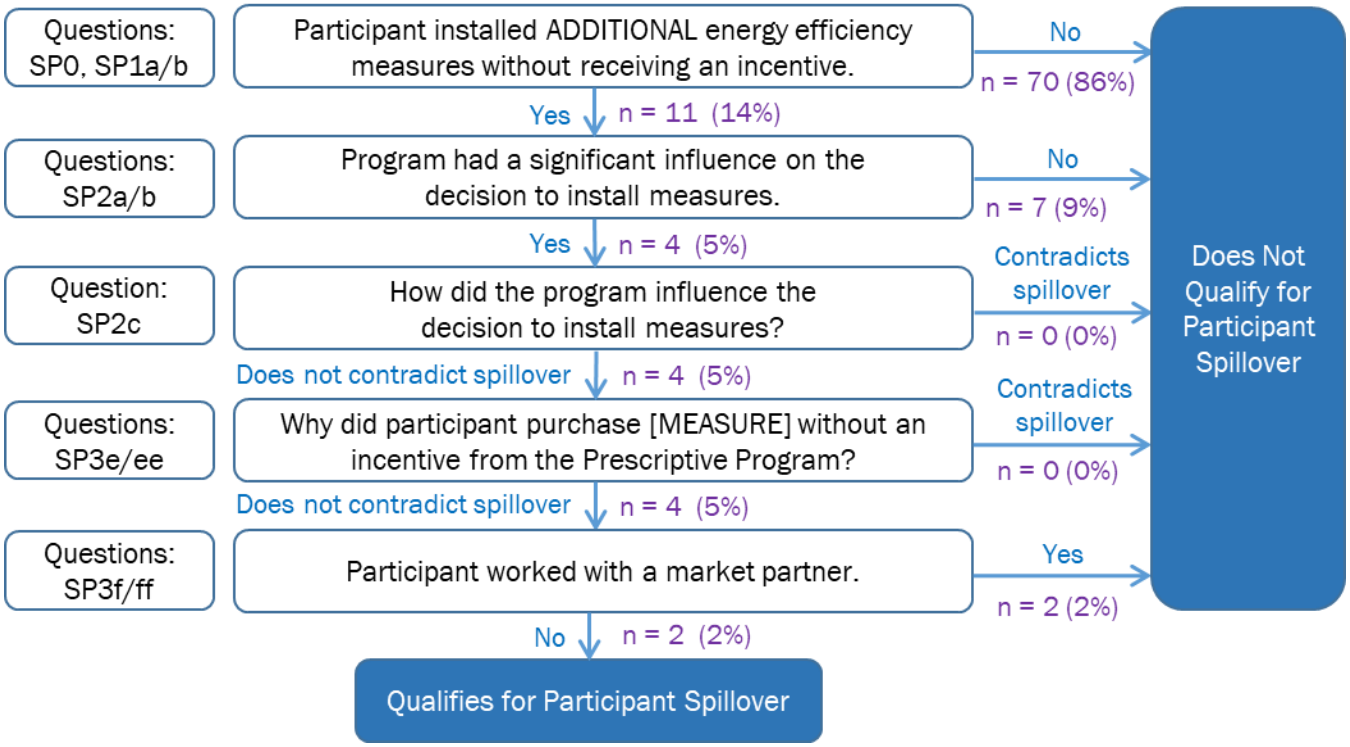
## Participant Spillover

A total of 81 participants completed the spillover questions in the participant survey and were included in the PSO analysis. Most of these participants did not install any additional energy efficiency measures without receiving an incentive (86%) or did install additional measures but were not significantly influenced by the program (9%). Two respondents (2%) qualified for PSO.

Figure 4-10 summarizes the analysis of PSO eligibility.

[33] A higher factor means a lower adjustment, i.e., less program influence on the timing of the project.

Figure 4-10. Participant Eligibility for Spillover - Results




We estimated spillover savings for the two respondents with PSO, using TRM algorithms and a combination of survey responses and deemed savings assumptions. Both respondents with PSO installed multiple lighting measures, as summarized in Table 4-10.

Table 4-10. Summary of Measure-Level Participant Spillover

| Participant | Measure | Quantity | Analysis Summary | kWh Per-unit | Total kWh |
|---|---|---|---|---|---|
| #1 | Linear LEDs | 15 | Engineering analysis based on survey responses and Ameren Missouri deemed savings assumptions. | 42 | 624 |
| | Controls/OS | 1 | | 140 | 140 |
| #2 | Linear LEDs | 20 | Engineering analysis based on survey responses and Ameren Missouri deemed savings assumptions. | 52 | 1,042 |
| | Non-Linear LEDs | 50 | | 79 | 3,947 |
| | LED Exit Signs | 4 | | 60 | 238 |
| **TOTAL** | | | | | **5,992** |

To determine the PSO Rate, we divided PSO savings by the total ex post gross savings of the sampled projects completed by the survey respondents. This calculation yielded a PSO rate of 0.57% for the SBDI Program.

$$PSO\ Rate = \frac{PSO}{Ex\ Post\ Gross\ Impacts} = \frac{5{,}992\ kWh}{1{,}058{,}622\ kWh} = 0.57\%$$

## Net Impacts

The evaluation team applied the PY2019 NTGR to determine net impacts for the PY2019 SBDI Program. Table 4-11 presents the first year net energy and demand impacts, showing a total of 5,427 MWh of energy savings and 1.07 MW of demand savings.

Table 4-11. PY2019 SBDI Annual First Year Net Impacts

| Measure Category | Energy Savings | | | Demand Savings | | |
|---|---|---|---|---|---|---|
| | Ex Post Gross (MWh) | NTGR | Ex Post Net (MWh) | Ex Post Gross (MW) | NTGR | Ex Post Net (MW) |
| LED Replacing T12 | 3,720 | 87.8% | 3,266 | 0.73 | 87.8% | 0.64 |
| Other Linear LED | 1,375 | | 1,207 | 0.27 | | 0.24 |
| Other Non-Linear LED | 957 | | 840 | 0.19 | | 0.17 |
| LED Replacing Incandescent A-Lamp | 128 | | 113 | 0.03 | | 0.02 |
| LED Exit Sign | 1 | | 1 | <0.01 | | <0.01 |
| **Total** | **6,181** | **87.8%** | **5,427** | **1.22** | **87.8%** | **1.07** |

Table 4-12 presents the last year ex post gross and ex post net demand impacts by measure type and EUL category. The program attained a total of 0.16 MW in the 10-14 Year EUL category and 0.72 MW in the 15+ Year EUL category. The majority of ex post net savings (81%) are associated with the 15+ year EUL category.

Table 4-12. PY2019 SBDI Annual Last Year Net Demand Impacts

| Measure Category | Ex Post Gross (MW) | | NTGR | Ex Post Net (MW) | |
|---|---|---|---|---|---|
| | 10-14 | 15+ | | 10-14 | 15+ |
| LED Replacing T12 | <0.01 | 0.73 | 87.8% | <0.01 | 0.64 |
| Other Linear LED | <0.01 | 0.27 | | <0.01 | 0.23 |
| Other Non-Linear LED | 0.18 | 0.01 | | 0.16 | 0.01 |
| LED Replacing Incandescent A-Lamp | - | 0.03 | | - | 0.02 |
| LED Exit Sign | - | <0.01 | | - | <0.01 |
| **Total** | **0.19** | **1..03** | **87.8%** | **0.16** | **0.91** |

# 5. New Construction Program

This section summarizes the PY2019 evaluation methodology and results for the New Construction Program Additional details on the evaluation methodology are presented in Chapter 0. Appendix E includes detailed desk review findings.

## 5.1 Evaluation Summary

The New Construction Program is designed to promote cost-effective, energy efficient design in nonresidential new construction and major renovation projects in the Ameren MO service territory. The program provides a financial incentive for projects to incorporate measures and design elements which reduce the projected annual energy use of the new building compared to a project-specific baseline, usually defined by the minimum requirements of building codes.

In PY2019, participants could choose from three types of energy efficiency incentives: installed interior lighting, custom measures, and whole building performance modeling. The program offers interior lighting incentives to participants who reduce the lighting power density (LPD) of the new building relative to the approved baseline.[34] All other non-lighting energy efficiency measures are eligible for custom incentives. All measures incentivized by the program must demonstrate reliable and cost-effective energy savings potential. Participants who choose to perform a whole building energy simulation of their project can receive the whole building performance incentive.

The PY2019 New Construction Program is an ongoing program from MEEIA Cycle II. Incentive levels for the LPD channel remained consistent with PY2018 while custom incentives are, by design, consistent with those offered in the Custom Incentive Program.

### 5.1.1 Participation Summary

In PY2019 the New Construction Program served 12 projects covering five enduses. One project included refrigeration measures in PY2019 yet this enduse accounts for over half (52%) of program level ex ante savings. Lighting measures account for almost one-third (32%) of savings although three-quarters of projects (75%) include lighting measures. Table 5-1 presents PY2019 participation and ex ante gross energy savings in the New Construction Program by enduse.

Table 5-1. PY2019 New Construction Participation Summary

| Enduse | Participants [a] | | Projects [a] | | Ex Ante Gross Savings | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | MWh | % |
| Lighting | 8 | 73% | 9 | 75% | 771 | 29% |
| HVAC | 3 | 27% | 3 | 25% | 446 | 17% |
| Refrigeration | 1 | 9% | 1 | 8% | 1,353 | 52% |
| Building Shell | 1 | 9% | 1 | 8% | 55 | 2% |
| **TOTAL** | **11** | **100%** | **12** | **100%** | **2,625** | **100%** |

[a] Sums to more than 100% due to participants installing multiple measures and projects containing more than one endues.

[34] The LPD baseline may be calculated on a space-by-space basis or using the whole building.

### 5.1.2 Key Impact Results

In PY2019 the New Construction Program achieved 46% and 47%, respectively, of Ameren Missouri's first year net energy savings and demand savings goals, and 101% and 41%, respectively, of Ameren Missouri's last year net demand savings targets in the 10-14 Year EUL and 15+ Year EUL categories. Table 5-2 presents first year and last year annual savings achieved in PY2019.

Table 5-2. PY2019 New Construction Savings Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| First Year Savings | | | | | | | |
| Energy Savings (MWh) | 2,626 | 74.6% | 1,959 | 79.0% | 1,549 | 3,349 | 46% |
| Demand Savings (MW) | 0.63 | 82.0% | 0.51 | 81.2% | 0.42 | 0.89 | 47% |
| Last Year Demand Savings | | | | | | | |
| <10 EUL (MW) | - | n/a | - | n/a | - | - | n/a |
| 10-14 EUL (MW) | 0.18 | 52.9% | 0.09 | 86.8% | 0.08 | 0.08 | 101% |
| 15+ EUL (MW) | 0.45 | 93.7% | 0.42 | 79.9% | 0.33 | 0.81 | 41% |

Based on desk reviews of all PY2019 New Construction projects, the program achieved RRs 75% and 82%, respectively, of first year gross energy and demand savings. A low realization rate for a single large project drives the overall program performance.

The evaluation team calculated new net-to-gross ratios (NTGR) for PY2019 based on in-depth interviews with participating customers. Given the variety of motivating factors that participants supplied during these interviews, the research team developed a separate NTGR for lighting and non-lighting savings. The savings-weighted program-level NTGRs are 79% and 81%, respectively, for first year energy and demand savings.

The program's overall achievement of 46% of net energy goals is as much driven by ex ante performance as it is by realization rates and evaluated NTGRs. The program's ex ante gross energy achievement of 2,626 kWh represents just 78% of net energy goals.

### 5.1.3 Key Process Findings

The PY2019 New Construction Program evaluation did not include a process evaluation. With only 12 completed projects the evaluation team decided to postpone process evaluation activities until PY2020 to allow for a more comprehensive assessment of program processes and participant satisfaction.

### 5.1.4 Conclusions and Recommendations

Based on the results of this evaluation, the evaluation team offers the following conclusions and recommendations for the New Construction Program moving forward:

- **Conclusion #1:** The evaluation team observed ex ante assumptions for baseline and incented equipment and building characteristics that do not align with typical New Construction program assumptions, including use of prescriptive algorithms and generic or typical assumptions for key parameters as opposed to site- or design-specific values.
  - **Recommendation:** Consider updating the New Construction Program guidelines to require building energy models for projects exceeding a threshold of 1 GWh of electric energy savings to reduce

the uncertainty of ex ante savings estimates. Additionally, consider updating ex ante assumptions and calculations to incorporate relevant building energy codes and TMY3 weather data, in place of deemed assumptions. New Construction projects require customized energy calculations and perform poorly when applying typical or average values in savings algorithms. The recommended adjustments will support increased accuracy of ex ante savings and overall program realization rates.

- **Conclusion #2:** The realization rates of 75% for energy savings and 82% for demand savings are driven by a single project and do not reflect a systemic issue in the program administration.
  - **Recommendation:** Continue delivering the New Construction Program with minor improvements presented in Conclusion #1. Exclusion of this project from the PY2019 evaluation calculations results in near 100% realization rates, suggesting that the New Construction Program's PY2019 realization rate is not an indication of broader or systemic issues.

## 5.2 Evaluation Methodology

As described in Chapter 0, the evaluation team performed gross and net impact evaluation activities to assess the performance of the New Construction Program in PY2019. Due to the low number of participants in PY2019, the evaluation team postponed process evaluation activities, including process-related in-depth interviews with program participants as well as in-depth interviews with market partners until PY2020.

Table 5-3 provides an overview of the New Construction Program evaluation activities. Following the table, we outline program-specific aspects of key evaluation methodologies.

Table 5-3. PY2019 Evaluation Activities for the New Construction Program

| Evaluation Activity | Description |
|---|---|
| Program Manager and Implementer Interviews | ▪ Conducted interviews (1) before program launch to inform evaluation planning and (2) towards the end of PY2019 to understand program staff's perspective on program performance. |
| Program Material Review | ▪ Reviewed available program materials to inform evaluation activities. |
| Tracking System Review | ▪ Reviewed implementer's tracking system to ensure that data required for the evaluation is being collected. |
| Participant Interviews | ▪ Conducted interviews with program participants to collect data to inform NTG (free ridership and participant spillover). |
| Engineering Desk Reviews | ▪ Reviewed supporting project documentation for all projects to ensure that original data was correctly entered from invoices and other documentation. |
| NTGR/Net Impact Analysis | ▪ Developed estimates of free ridership and participant spillover.<br>▪ Estimated PY2019 net impacts. |

### 5.2.1 Participant In-Depth Interview

The evaluation team conducted in-depth interviews with program participants in the PY2019 New Construction Program. During each interview we asked program participants a battery of questions about their decision to include energy-efficient measures in their project and how their experience with the New Construction Program may or may not have influenced this decision. Results from the participant interviews are the basis of the net-to-gross ratio analysis for PY2019. Given the small number of total projects, we attempted to interview all PY2019 participants, i.e., a census attempt.

### 5.2.2 Engineering Desk Reviews

We conducted engineering desk reviews of all 12 PY2019 New Construction projects to review and verify savings assumptions. The review of documents focused on the method of estimating savings as well as results and included the following:

- Verification of the project baseline to either local building code or the initial design level, if already started when applying for incentives.
- Comparison of product specifications with building models or engineering equations.
- Review of building energy model inputs or revising the inputs of engineering weather bin calculations based on the installed conditions., where applicable. The models are calibrated to the building's electric billing data or submeter data when available.
- Review of post-inspection site visit materials, where available, including as-installed photographs of model plates and screenshots from the building management computer for air-side and water-side equipment.
- Replication of ex ante calculations to validate the equation result or differences in the base and efficient building model.

Table 5-4. New Construction Desk Review Sampling Summary

| Stratum | Number of Projects | | 1st Year Ex Ante Savings (kWh) | | |
|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | % Sampled |
| Census | 12 | 12 | 2,625,758 | 2,625,758 | 100% |

### 5.2.3 NTGR Analysis

As discussed in Chapter 0, the NTGR analysis for the PY2019 New Construction Program included estimation of FR and PSO. The NTRG calculation uses the following formula:

$$NTGR = 1 - FR + PSO$$

The evaluation team did not include a quantity or timing adjustment in the New Construction FR analysis, as was done in other BizSavers program evaluations, because the FR algorithm without a quantity adjustment fully captures the influence of the New Construction Program: The definition of a measure in the New Construction Program alleviates the need for separate consideration of program influence on quantity. For example, the "measure" for Installed Interior Lighting projects is "reduced lighting power density" which already embeds the concept of quantity. Similarly, because of the size and scope of new construction and major renovation projects, it is assumed the Ameren Missouri New Construction program had no impact on the timing of the project.

The methods used for calculating FR and PSO are summarized in Chapter 0 and are further detailed in Appendix A.

## 5.3 Evaluation Results

### 5.3.1 Gross Impact Results

This section summarizes gross impact results for the PY2019 New Construction Program. Ex post gross savings are based on desk reviews for all 12 PY2019 projects.

The New Construction Program achieved first year ex post gross energy savings of 1,959 MWh and first year ex post gross demand savings of 0.51 MW, with realization rates of 75% and 82%, respectively (see Table 5-5).

Table 5-5. PY2019 New Construction Program Annual Savings

| | Ex Ante Gross | Gross RR | Ex Post Gross |
|---|---|---|---|
| **First Year Savings** | | | |
| Energy Savings (MWh) | 2,626 | 74.6% | 1,959 |
| Demand Savings (MW) | 0.63 | 82.0% | 0.51 |
| **Last Year Savings** | | | |
| < 10 EUL (MW) | - | n/a | - |
| 10-14 EUL (MW) | 0.18 | 52.9% | 0.09 |
| 15+ EUL (MW) | 0.45 | 93.7% | 0.42 |

Over half of program ex ante gross energy savings are associated with a single refrigeration project, which realized 53% of ex ante energy savings and is the primary driver of program performance. Gross energy and demand savings results, by enduse, are summarized in Table 5-6.

Table 5-6. PY2019 New Construction Program Annual First Year Gross Impacts

| Enduse | Energy Savings | | | Demand Savings | | |
|---|---|---|---|---|---|---|
| | Ex Ante (MWh) | Gross RR | Ex Post (MWh) | Ex Ante (MW) | Gross RR | Ex Post (MW) |
| Lighting | 771 | 102.2% | 788 | 0.15 | 102.2% | 0.15 |
| HVAC | 446 | 95.1% | 425 | 0.27 | 93.2% | 0.25 |
| Refrigeration | 1,353 | 52.9% | 715 | 0.18 | 52.9% | 0.10 |
| Building Shell | 55 | 57.1% | 32 | 0.02 | 57.1% | 0.01 |
| **Total** | **2,626** | **74.6%** | **1,959** | **0.63** | **82.0%** | **0.51** |

Table 5-7 summarizes last year gross demand savings by enduse. HVAC (60%) and lighting (36%) account for 96% of demand savings in the 15+ Year EUL category and have the highest realization rates.

Table 5-7. PY2019 New Construction Program Annual Last Year Gross Demand Impacts

| Enduse | 10-14 Year EUL | | | 15+ Year EUL | | |
|---|---|---|---|---|---|---|
| | Ex Ante (MW) | Gross RR | Ex Post (MW) | Ex Ante (MW) | Gross RR | Ex Post (MW) |
| Lighting | - | n/a | - | 0.15 | 102.2% | 0.15 |
| HVAC | - | n/a | - | 0.27 | 93.2% | 0.25 |
| Refrigeration | 0.18 | 52.9% | 0.09 | 0.01 | 52.9% | <0.01 |
| Building Shell | - | n/a | - | 0.02 | 57.1% | 0.01 |
| **Total** | **0.18** | **52.9%** | **0.09** | **0.45** | **93.7%** | **0.42** |

The following presents the major findings of the desk reviews at the measure level.

- **Refrigeration-Freezer Insulation (Heat Recovery):** The gross realization rate for refrigeration-freezer insulation measures was 15% for energy and demand savings.
  - A single New Construction participant implemented a heat recovery project as part of a larger comprehensive set of improvements claimed through the program. The heat recovery system is used to melt ice coming from an ice rink. While we observed minor differences between ex ante and ex post assumptions, the ex ante assumed baseline of electric resistance heating for the ice melt pit is considered inappropriate for a new construction project. First, project design documents indicated that fuels other than electric resistance heating were considered, and second, common practice for ice rinks is to utilize "free" solar heat to melt ice. The evaluation team determined that in the absence of the incentive program, the design would not have included electric resistance heat for melting ice. Realized savings are the result of the project's application of recovered heat for sub-soil heating.
- **HVAC Controls:** The gross realization rate for HVAC controls was 87% for energy and 80% for demand.
  - In PY2019, two HVAC controls projects achieved electric energy realization rates of 45% and 100%, respectively. Both projects estimated energy savings through building energy modeling methods. For the project realizing 45% of ex ante energy savings, the evaluation team found that the ex ante building model claimed savings for implementation of an enthalpy economizer over a baseline assumption of no economizer. The evaluation team applied the building code standard dry bulb economizer to the baseline, reducing realized savings. Additionally, ex ante energy models included lighting interaction savings from reduced radiant heat gains associated with a lighting power density (LPD) project at the same site. The evaluation team removed the interactive savings, because savings from the LPD component of the project will not be claimed until PY2020. To maintain consistency and avoid double-counting, interactive savings should not be claimed until PY2020 either.
- **Building Shell Wall Insulation:** The gross realization rate for building shell wall insulation was 60% for energy and 58% for demand.
  - The evaluation team referred to recognized standards for the engineering calculation inputs, including ice and sub soil temperatures, resulting in a lower heat load for the chillers to remove. For wall insulation, the program implementer assumed a constant 70°F outdoor air temperature, while ex post calculations used monthly average dry bulb temperatures from typical meteorological year (TMY3) weather data. Further, the evaluation team considered seasonal effects from the design, such as negative savings associated with heat transfer between indoor ambient air temperatures and the ice surface, while ex ante assumptions did not, resulting in reduced verified energy savings.

## 5.3.2 Net Impact Results

### Net-To-Gross Ratio Results

The evaluation team conducted in-depth interviews with eight participants to develop NTGRs for lighting and non-lighting enduses for the PY2019 New Construction Program. We estimate the lighting NTGR to be 67.5% and the non-lighting NTGR to be 86.8%, resulting in a program-level NTGR of 79.0%. Table 5-8 presents the individual NTGR components (i.e., FR and PSO) and the resulting NTGR for both enduses and overall.

Table 5-8. PY2019 New Construction Program Net-to-Gross Ratio

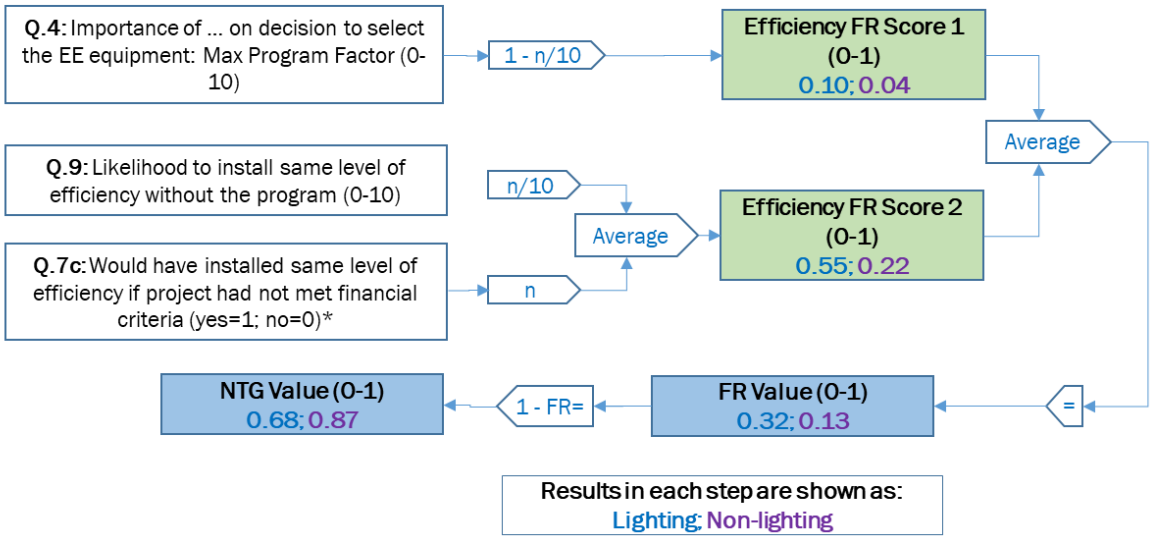
| Enduse | Free Ridership (FR) | Participant Spillover (PSO) | NTGR (1-FR+PSO) |
|---|---|---|---|
| Non-Lighting | 13.2% | 0% | 86.8% |
| Lighting | 32.5% | 0% | 67.5% |
| **Overall Program** | **21.0%** | **0%** | **79.0%** |

The interview period spanned approximately six weeks during the months of January and February 2020. During this period, we attempted to contact all 12 participants via email and phone. We attempted a census of completed projects, and as such, the concept of sampling precision does not apply. Eight (67%) participants agreed to participate in an interview, one (8%) participant refused to complete an interview, and three (25%) participants could not be reached.[35]

### Free Ridership

We estimate the lighting FR to be 32.5% and non-lighting FR to be 13.2%. The following figure summarizes FR results for New Construction participants, using a modified version of the diagram presented in Chapter 0.

Figure 5-1. Free Ridership Results – New Construction




*Asked of those who rated importance of financial criteria >7 and indicated that the incentive caused the project to meet their financial criteria

[35] All participants who did not complete an interview were contacted at least four times before being considered unreachable.

The New Construction Program achieved a lower NTGR in PY2019 than in past program years, which found NTGRs between 90% and 100%. Results from in-depth interviews suggest that increasing awareness among participants about the benefits of energy-efficient lighting has decreased the influence of interior lighting incentives on lighting design choices or equipment specifications. When asked about their main reason for including LED lighting in their projects, participants frequently cited long-term cost-effectiveness from expected energy savings and reduced maintenance costs. When probed on the source of this knowledge, however, most participants credited resources outside of the New Construction Program, including interaction with vendors and professional expertise.

Interviews with participants who installed non-lighting measures suggest that custom incentives were more effective than interior lighting incentives at driving energy savings in PY2019. Participants voiced that custom incentives were effective due to the high upfront costs of purchasing energy-efficient non-lighting measures such as HVAC equipment. Participants also often noted that they were less likely to have installed the exact same measures without an incentive when compared to participants who only received interior lighting incentives. Still, the evaluation team noted that the decision to include non-lighting measures may be more complex than interior lighting, as custom track participants showed more variation in their scoring of program factors. For this reason we developed separate NTGRs for lighting and non-lighting enduses.

### Participant Spillover

The participant in-depth interviews revealed no evidence of PSO during PY2019. During the interviews, we asked participants questions about unincentivized energy efficiency improvements that may have been included in their projects or installed after they participated in the New Construction Program. While four out of eight respondents installed additional energy efficiency measures without receiving an incentive, one indicated they will be applying for an incentive in the future and the other three indicated a level of program influence on this decision that was below the established threshold of participant spillover.

Appendix A presents more detailed information on the screening criteria used in the PSO analysis.

## Net Impacts

The evaluation team applied the PY2019 NTGRs to ex post gross savings to determine ex post net impacts for the PY2019 New Construction Program. Table 5-9 and Table 5-10 present these results.

Table 5-9. PY2019 New Construction Program First Year Net Impacts

| Enduse | Energy Savings | | | Demand Savings | | |
|---|---|---|---|---|---|---|
| | Ex Post Gross (MWh) | NTGR | Ex Post Net (MWh) | Ex Post Gross (MW) | NTGR | Ex Post Net (MW) |
| Lighting | 788 | 67.5% | 532 | 0.15 | 67.5% | 0.10 |
| HVAC | 425 | 86.8% | 369 | 0.25 | 86.8% | 0.22 |
| Refrigeration | 715 | | 621 | 0.10 | | 0.08 |
| Building Shell | 32 | | 27 | 0.01 | | 0.01 |
| **Total** | **1,959** | **79.0%** | **1,549** | **0.51** | **81.2%** | **0.42** |

Table 5-10. PY2019 New Construction Program Annual Last Year Net Demand Impacts

| Enduse | Ex Post Gross (MW) | | NTGR | Ex Post Net (MW) | |
|---|---|---|---|---|---|
| | 10-14 | 15+ | | 10-14 | 15+ |
| Lighting | - | 0.15 | 67.5% | - | 0.10 |
| HVAC | - | 0.25 | | - | 0.22 |
| Refrigeration | 0.09 | <0.01 | 86.8% | 0.08 | <0.01 |
| Building Shell | - | 0.01 | | - | 0.01 |
| **Total** | **0.09** | **0.42** | **81.2%** | **0.08** | **0.33** |

# 6. Retro-Commissioning Program

This section summarizes the PY2019 evaluation methodology and results for the Retro-Commissioning (RCx) Program. Additional details on the evaluation methodology are presented in Chapter 0. Appendix F also includes detailed findings from the onsite visits.

## 6.1 Evaluation Summary

The RCx Program is designed to help customers retro-commission existing facilities. Program activities include conducting a retro-commissioning study, benchmarking existing building system performance levels, identifying operating system performance optimization improvements, and, where applicable, providing financial incentives to support implementation of program recommendations. The most common optimization measures involve compressed air, refrigeration, and building systems. The program relies on qualified contractors (Retro-Commissioning Service Providers, or RSPs) to deliver measurable energy savings. These RSPs complete a facility energy study on equipment optimization and educate customers about maintaining equipment efficiency.

The PY2019 RCx Program is an ongoing program from MEEIA Cycle II. Program design and implementation have not changed since PY2018.

### 6.1.1 Participation Summary

The PY2019 RCx Program completed four projects--two HVAC projects and two compressed air projects—accounting for 1,086 MWh of gross energy savings. The two HVAC projects account for 84% of the ex ante savings. Table 6-1 presents PY2019 participation and gross energy savings by enduse.

Table 6-1. PY2019 RCx Program Participation Summary

| Enduse/Channel | Participants | | Projects | | Ex Ante Savings | |
|---|---|---|---|---|---|---|
| | Number | Number | Number | % | MWh | % |
| HVAC | 2 | 50.0% | 2 | 50.0% | 911 | 83.9% |
| Compressed Air | 2 | 50.0% | 2 | 50.0% | 175 | 16.1% |
| **Total** | **4** | **100.0%** | **4** | **100.0%** | **1,086** | **100.0%** |

### 6.1.2 Key Impact Results

In PY2019 the RCx Program achieved 49% and 86%, respectively, of Ameren Missouri's first year net energy savings and demand savings goals, and 4% and 191%, respectively, of Ameren Missouri's last year net demand savings targets in the 10-14 Year EUL and 15+ Year EUL categories.

Table 6-2 presents first year and last year savings achieved in PY2019.

Table 6-2. PY2019 RCx Program Impact Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| First Year Savings | | | | | | | |
| Energy Savings (MWh) | 1,086 | 122.0% | 1,324 | 100.0% | 1,324 | 2,679 | 49% |
| Demand Savings (MW) | 0.67 | 125.1% | 0.84 | 100.0% | 0.84 | 0.98 | 86% |

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| Last Year Demand Savings | | | | | | | |
| < 10 EUL (MW) | - | n/a | - | n/a | - | - | n/a |
| 10-14 EUL (MW) | 0.02 | 100.0% | 0.02 | 100.0% | 0.02 | 0.55 | 4% |
| 15+ EUL (MW) | 0.65 | 126.0% | 0.82 | 100.0% | 0.82 | 0.43 | 191% |

Based on desk reviews and onsite visits of all four PY2019 RCx projects, the program achieved 1,324 MWh and 0.84 MW in ex post gross savings. Although the PY2019 program fell short of its savings goals, the program's ex post savings exceeded the ex ante savings for both energy and demand, earning gross realization rates of 122% and 125%, respectively.

### 6.1.3 Key Process Findings

The PY2019 RCx Program evaluation did not include a process evaluation. With only four completed projects, the evaluation team postponed process evaluation activities until PY2020 to allow for a more comprehensive assessment of program processes and participant satisfaction.

### 6.1.4 Conclusions and Recommendations

Based on the results of this evaluation, the evaluation team offers the following conclusions and recommendations for the RCx Program:

- **Conclusion #1:** The RCx Program allows for a facility to complete an air leak study every three years. Both of the PY2019 compressed air projects involved air leak measures for participants who had previously participated in the RCx Program. For one of these customers, leaks previously fixed by the RCx Program were leaking again, suggesting that an effective useful life (EUL) of 15 years does not align with evaluation findings for the types the compressed air measures provided through the RCx Program.
  - **Recommendation #1:** Update the EUL for compressed air measures to be consistent with other regional TRMs and industry standards.

## 6.2 Evaluation Methodology

The evaluation team performed impact evaluation activities to assess the savings performance of the RCx Program in PY2019 and postponed both process evaluation activities and NTG research due to limited participation in PY2019.

Table 6-3 provides an overview of the RCx Program evaluation activities. Following the table, we outline program-specific aspects of evaluation methodologies.

Table 6-3. PY2019 Evaluation Activities for the RCx Program

| Evaluation Activity | Description |
|---|---|
| Program Manager and Implementer Interviews | ▪ Conducted interviews (1) before program launch to inform evaluation planning and (2) towards the end of PY2019 to understand program staff's perspective on program performance. |
| Program Material Review | ▪ Reviewed available program materials to inform evaluation activities. |

| Evaluation Activity | Description |
|---|---|
| Tracking System Review | ▪ Reviewed implementer's tracking system to ensure that data required for the evaluation is being collected. |
| Engineering Desk Reviews & Onsite Verification | ▪ Reviewed supporting project documentation for all projects to ensure that original data was correctly entered from invoices and other documentation.<br>▪ Verified measure installation, operation, and characteristics. |
| Net Impact Analysis | ▪ Estimated PY2019 net impacts. |

### 6.2.1 Engineering Desk Reviews and Onsite Verification

The evaluation team conducted onsite verification and impact analysis for all four PY2019 completed RCx projects. Table 6-4 presents the distribution of measures by enduse for the RCx Program population.

Table 6-4. Distribution of Sampled Projects by Enduse

| Enduse | Number of Projects | | 1st Year Ex Ante Savings | | |
|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | % Sampled |
| HVAC | 2 | 2 | 911 | 911 | 100% |
| Compressed Air | 2 | 2 | 175 | 175 | 100% |
| **Total** | **4** | **4** | **1,086** | **1,086** | **100%** |

We combined the evaluation results for all four projects to calculate the total program ex post savings and realization rates.

### 6.2.2 NTGR Analysis

The evaluation team did not conduct primary NTGR research in PY2019. Although we initially planned to interview RCx Program participants to develop NTGRs, due to low participation in PY2019, we postponed interviews until mid-2020 to allow for the inclusion of more participants. Instead, we applied a NTGR of 1.0, which is consistent with the past three years of evaluation results for this program as well as the nature of RCx projects which have a significant upfront study cost

## 6.3 Evaluation Results

### 6.3.1 Gross Impact Results

This section summarizes gross impact results for the PY2019 RCx Program. Ex post gross savings are based on onsite verification and analysis for all four projects in the PY2019 RCx Program population.

Table 6-5 presents PY2019 RCx Program annual gross savings. As shown, the program achieved first year ex post gross energy and demand savings of 1,324 MWh and 0.84 MW, respectively, as well as last year ex post demand savings of 0.02 MW in the 10-14 Year EUL category and 0.82 MW in the 15+ Year EUL category.

Table 6-5. PY2019 RCx Program Gross Impact Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross |
|---|---|---|---|
| **First Year Savings** | | | |
| Energy Savings (MWh) | 1,086 | 122.0% | 1,324 |
| Demand Savings (MW) | 0.67 | 125.1% | 0.84 |
| **Last Year Demand Savings** | | | |
| < 10 EUL (MW) | - | n/a | - |
| 10-14 EUL (MW) | 0.02 | 100.0% | 0.02 |
| 15+ EUL (MW) | 0.65 | 126.0% | 0.82 |

Table 6-6 presents PY2019 RCx Program annual first year gross savings by enduse. HVAC measures provided most of the energy and demand savings.

Table 6-6. PY2019 RCx Program Annual First Year Gross Impacts by Enduse

| End-Use | Energy Savings | | | Demand Savings | | |
|---|---|---|---|---|---|---|
| | Ex Ante (MWh) | Gross RR | Ex Post (MWh) | Ex Ante (MW) | Gross RR | Ex Post (MW) |
| HVAC | 911 | 126.2% | 1,150 | 0.65 | 126.0% | 0.82 |
| Compressed Air | 175 | 100.0% | 174 | 0.02 | 100.0% | 0.02 |
| **Total** | **1,086** | **122.0%** | **1,324** | **0.67** | **125.1%** | **0.84** |

The PY2019 program achieved gross realization rates of 126% for HVAC projects and 100% for compressed air projects. The realization rate of 100% for the compressed air enduse indicates good alignment between ex ante and ex post savings assumptions. We observe the following for the two completed HVAC projects:

- Due to the interactive nature of multiple retro-commissioning measures impacting HVAC loads and equipment, the evaluation team determined ex post savings by analyzing building-level energy use before and after the participant implemented the RCx measures. While this approach presents a more accurate assessment of the total energy impact of the RCx project, the whole-building perspective makes it difficult to determine specific reasons for differences between ex ante and ex post savings.
- The high realization rate for the larger HVAC project is likely due to the customer's adoption of a continuous commissioning approach to actively monitor building management system (BMS) data and optimize system operation.
- The high realization rate for the smaller HVAC project is due a difference in HVAC equipment efficiency levels assumed in the ex ante analysis and identified (through RTU submittals) in the ex post analysis.

Table 6-7 presents ex ante and ex post last year gross demand impacts by measure type and EUL category. As shown, the majority of last year demand savings comes from HVAC projects in the 15+ Year EUL category.

Table 6-7. PY2019 RCx Program Annual Last Year Gross Demand Impacts

| End-Use | 10-14 Year EUL | | | 15+ Year EUL | | |
|---|---|---|---|---|---|---|
| | Ex Ante (MW) | Gross RR | Ex Post (MW) | Ex Ante (MW) | Gross RR | Ex Post (MW) |
| HVAC | - | n/a | - | 0.65 | 126.0% | 0.82 |
| Compressed Air | 0.02 | 100.0% | 0.02 | - | n/a | - |
| **Total** | **0.02** | **100.0%** | **0.02** | **0.65** | **126.0%** | **0.82** |

### 6.3.2 Net Impact Results

As noted above, the evaluation team applied an NTGR of 1.0 to estimate net impacts for the PY2019 RCx Program. As such, net impacts for the RCx Program are equal to the gross impact presented in the section above.

# 7. Business Social Services Program

This section summarizes the PY2019 evaluation methodology and results for the Business Social Services (BSS) Program. While the BSS Program is part of Ameren Missouri's portfolio of low-income programs, the evaluation results are presented in this volume because of implementation and evaluation similarities with the other business programs: (1) it is implemented by the same implementation contractor using similar program processes and (2) it was evaluated using similar evaluation methods.

Additional details on the evaluation methodology are presented in Chapter 0. Appendix G includes detailed desk review findings.

## 7.1 Evaluation Summary

The Business Social Services (BSS) Program is a new program for Ameren Missouri in PY2019. The program is designed to promote the installation of energy-efficient technologies in social service organizations by removing barriers such as high upfront cost, lack of financing, lack of knowledge, and lack of time and resources to investigate energy efficiency opportunities.

The target market consists of commercial, nonprofit, and tax-exempt business customers that provide social services to the low-income public in federally designated opportunity zones, including family services, healthcare facilities, homeless shelters, employment services, worker training, job banks, and childcare facilities. The BSS Program provides lighting and HVAC measures and installation at low or no cost to social services business customers with qualifying facilities. Service Providers supply and install measures, finalize paperwork for eligible participants, and identify additional energy efficiency opportunities not covered under the BSS Program.

In PY2019, the BSS Program offered the highest incentive levels for deemed measures among all BizSavers programs, including interior lighting incentives that covered 100% of eligible costs. Towards the end of 2019, implementation staff began slowing down the program, as it was running up against its budget cap, and initiated removal of some of the more costly lighting measures in an effort to serve a larger number of customers going forward.

### 7.1.1 Participation Summary

In PY2019, the BSS Program served 14 unique customers who implemented 31 energy-efficiency projects accounting for 1,072 MWh of ex ante gross energy savings. PY2019 program activity was heavily focused on lighting, with only one BSS project including non-lighting measures (smart thermostats). Table 7-1 presents PY2019 participation and ex ante gross energy savings by enduse.

Table 7-1. PY2019 Business Social Services Participation Summary

| Enduse | Participants [a] | | Projects [a] | | Ex Ante Gross Savings | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | MWh | % |
| Lighting | 14 | 100% | 31 | 100% | 516 | 99.8% |
| HVAC | 1 | 7% | 1 | 3% | 2 | 0.2% |
| **Total** | **14** | **100%** | **31** | **100%** | **1,072** | **100%** |

[a] Sums to more than 100% due to participants installing multiple measures and projects containing more than one endues.

### 7.1.2 Key Impact Results

Table 7-2 presents first year and last year annual savings achieved in PY2019. As shown, the program achieved 112% and 113%, respectively, of Ameren Missouri's first year net energy and demand savings goals, and 22% and 322%, respectively, of Ameren Missouri's last year net demand savings targets in the 10-14 Year EUL and 15+ Year EUL categories.

Table 7-2. PY2019 BSS Savings Summary

| | Ex Ante Gross | Gross RR | Ex Post Gross | NTGR | Ex Post Net | Goal/Target Net | % of Goal/Target |
|---|---|---|---|---|---|---|---|
| First Year Savings | | | | | | | |
| Energy Savings (MWh) | 1,072 | 103.2% | 1,106 | 100.0% | 1,106 | 987 | 112% |
| Demand Savings (MW) | 0.21 | 105.0% | 0.22 | 100.0% | 0.22 | 0.19 | 113% |
| Last Year Demand Savings | | | | | | | |
| < 10 EUL (MW) | - | n/a | - | n/a | - | 0.02 | 0% |
| 10-14 EUL (MW) | 0.02 | 105.0% | 0.02 | 100.0% | 0.02 | 0.11 | 22% |
| 15+ EUL (MW) | 0.18 | 105.0% | 0.19 | 100.0% | 0.19 | 0.06 | 322% |

The PY2019 BSS Program achieved gross RRs of over 100% for first year energy and demand savings as well as last year demand savings. The main driver of these RRs are small differences in ex ante and ex post assumptions for lighting measures, most notably waste heat factors and interactive factors.

Because the BSS Program is part of the Low-Income Portfolio, the default NTGR for this program is 1.0 and net savings are equal to gross savings.

### 7.1.3 Key Process Findings

The following summarizes the evaluation team's key process findings. Details supporting each finding are provided in Section 7.3.1.

- **Program Participation:** The PY2019 BSS Program served 14 unique customers who completed 31 projects. The program almost exclusively focused on lighting, with all 31 projects including interior lighting and only one project also including two smart thermostats. Participants in the program primarily consisted of customers offering family, social, and healthcare services, with a majority of building types being classified as government, healthcare, faith-based, and educational.
- **Barriers to Energy Efficiency Improvements and Program Participation:** The key barriers to implementing energy-efficient upgrades among social services organizations are cost, a lack of time, and a lack of knowledge of the benefits of energy efficiency upgrades. Barriers specific to program participation for these customers include the current incentive levels for non-lighting equipment, a lack of program awareness, and the limited BSS Program budget.
- **Marketing:** Customer targeting and lead generation for the BSS Program are the primary responsibility of Ameren's Corporate Contributions and Community Initiatives Group. Customer leads are generated using targeted outreach to a small list of organizations that meet United Way qualifying criteria and are located in an opportunity zone within Ameren Missouri's service territory. To better manage participation, the program is not widely marketed, and Service Providers are not tasked with generating leads.

- **Service Providers:** The PY2019 program relied on five Service Providers who were hand-selected from the group of PY2018 SBDI Service Providers and invited to fulfill this role. Service Providers offer a host of support services to their customers, including conducting walk throughs of the facilities to identify energy efficiency opportunities, explaining program rules and processes, and supporting the customer through the entire program participation process.
- **Training and Communication:** Service Providers did not receive any program-specific training due to their prior experience with the BizSavers programs as SBDI Service Providers, as well as similarities in program delivery between the BSS Program and other BizSavers programs. While Service Providers generally felt that they were sufficiently prepared to implement the program, there appeared to be information gaps with respect to roles and responsibilities, generating leads, and program structure and processes.
- **Customer and Service Provider Satisfaction:** Both participants and Service Providers reported high satisfaction with the BSS Program and its processes. Participants were extremely grateful for the support and energy-savings opportunities provided by the program, and Service Providers expressed satisfaction with being able to reach an otherwise underserved market. The main areas of slight dissatisfaction that emerged from our research were incentive levels for non-lighting equipment, the lack of incentives for exterior lighting, and occasional delays in incentive payments to Service Providers.

### 7.1.4 Conclusions and Recommendations

Based on the results of this evaluation, the evaluation team offers the following conclusions and recommendations for the BSS Program:

- **Conclusion #1:** Some Service Providers do not fully understand certain aspects of BSS Program rules and processes, including the structure for obtaining leads and degree of expected customer interaction.
  - **Recommendation:** While formal Service Provider training appears unnecessary, the program should provide Service Providers with more information on program processes, in particular differences between the BSS Program and other BizSavers programs in terms of lead generation and customer interactions.
- **Conclusion #2:** Some participants reported confusion following the initial outreach and a desire to better understand the program and their potential participation prior to submitting an application.
  - **Recommendation:** The program may wish to supplement their initial outreach to targeted customers with a follow-up phone call in order to provide additional information about the program, overcome customer skepticism that the offer is “too good to be true.” and answer customer questions about their potential participation.
- **Conclusion #3:** The program is singularly focused on interior lighting with virtually no uptake of non-lighting measures. This is the result of insufficient incentive levels for non-lighting measures to induce energy-efficient upgrades and a primary focus of most BSS Service Providers on lighting measures.
  - **Recommendation**: If the program wishes to achieve deeper savings, it should consider (1) adding incentives for exterior lighting and adjusting non-lighting incentives (including HVAC measures) to a level that is attractive enough to induce uptake and (2) recruiting Service Provider with non-lighting specializations in order to create more opportunities to develop these projects within the BSS Program. However, given the limited budget, depth of savings should be weighed against

maximizing the number of social service organizations that can be served, a balance the program was actively seeking to strike in PY2019.

## 7.2 BSS Evaluation Methodology

Table 7-3 provides an overview of the PY2019 evaluation activities for the BSS Program. Most of these activities are similar across the various business programs and were described in Chapter 0. The sections following the table highlight program-specific aspects of key evaluation activities.

Table 7-3. PY2019 Evaluation Activities for the BSS Program

| Evaluation Activity | Description |
|---|---|
| Program Manager and Implementer Interviews | ▪ Conducted interviews (1) prior to program launch to inform evaluation activities and (2) towards the end of PY2019 to understand program staff's perspective on program performance. |
| Program Material Review | ▪ Reviewed all program materials to inform evaluation activities. |
| Tracking System Review | ▪ Reviewed implementer's tracking system to ensure that data required for the evaluation is being collected. |
| Participant Interviews | ▪ Conducted interviews with program participants to collect data to yield process-related insights. |
| Service Provider Interviews | ▪ Conducted interviews with program Service Providers to yield process-related insights. |
| Engineering Database Review | ▪ Reviewed program database to check that program data are complete and that program-installed measures meet all program requirements. |
| Engineering Desk Reviews | ▪ Reviewed supporting project documentation for a sample of projects to ensure that original data was correctly entered from invoices and other documentation.<br>▪ Developed ex post savings for the sample and the population. |
| Net Impact Analysis | ▪ Estimated PY2019 net impacts. |

### 7.2.1 Participant Interviews

In January and February 2020, the evaluation team conducted in-depth interviews with Ameren Missouri business customers who participated in the BSS Program during PY2019. The primary purpose of the interviews was to collect data to support the process analysis, including assessment of interactions with Service Providers, participant satisfaction, and barriers to making additional energy efficiency improvements that could result in greater savings.

At the time of the interviews, 14 unique customers had completed 31 BSS projects. The team conducted interviews with 8 of these 14 customers, in an effort to capture the diversity in the number and size of projects. Table 7-4 provides an overview of the interviewed BSS participants.

Table 7-4. Summary of Interviewed BSS Participants

| Participant | Organization Role | Social Service | Business Locations | Employees | Number of BSS Projects |
|---|---|---|---|---|---|
| 1 | Chief Financial Officer | Child Welfare | 6 | 100 – 200 | 3 |
| 2 | Facilities Manager | Family Services | 7 | > 200 | 2 |
| 3 | Environmental Services Manager | Primary Healthcare | 4 | Unknown | 2 |
| 4 | Director | Early Learning | 1 | 20 – 50 | 2 |
| 5 | Vice President of Operations | Community Action | 6 | > 200 | 1 |

| Participant | Organization Role | Social Service | Business Locations | Employees | Number of BSS Projects |
|---|---|---|---|---|---|
| 6 | Director of Advancement | Behavioral Health | 3 | 100 – 200 | 1 |
| 7 | Chief Executive Officer | Affordable Housing | 2 | 20 – 50 | 1 |
| 8 | Director of Development | Youth Development | 1 | < 20 | 1 |

### 7.2.2 Service Provider Interviews

In January 2020, we conducted in-depth interviews with BSS Service Providers who participated in the BSS Program during PY2019. The primary purpose of the interviews was to collect data to support the process analysis, including motivations for becoming a BSS Service Provider, any training provided by the program, challenges to program delivery, perceived barriers to energy efficiency and program participation among BSS customers, and recommended for program improvements.

During PY2019, the BSS Program had five registered Service Providers, and all five were active in the program. We interviewed all five Providers to comprehensively capture their perspective of the program in its first year of implementation. Table 7-5 provides an overview of the interviewed BSS participants.

Table 7-5. Summary of Interviewed BSS Service Providers

| Service Provider | Company Role | Equipment Specialty | Prior Experience with Nonprofits | Business Locations | Employees | Number of BSS Projects |
|---|---|---|---|---|---|---|
| 1 | Pipeline Manager | LED Lighting | Yes | 5 | 20 – 30 | 9 |
| 2 | Owner | General Electric | Yes | 2 | 20 – 30 | 3 |
| 3 | Owner | General Electric | Yes | 1 | 20 – 30 | 5 |
| 4 | Owner | Lighting | Yes | 1 | < 10 | 9 |
| 5 | Owner | Lighting | No | 1 | < 10 | 5 |

### 7.2.3 Engineering Desk Reviews

We conducted engineering desk reviews for a sample of 20 BSS projects to review and verify savings assumptions. The main purpose of the desk reviews was to verify that the program-tracking database correctly reflects the installed measure(s), including measure type, measure quantity, and key inputs into the savings algorithm such as baseline and efficient wattages, hours of use, waste heat and interactive factors, and heating penalties.

In PY2019, only one BSS project included non-lighting measures. As such, we did not stratify the desk review sample by technology. However, we did stratify by ex ante energy savings, dividing the population of projects into two strata, where each stratum included approximately one-half of population savings.[36] Table 7-6 summarizes the sampling strategy for the BSS desk reviews.

[36] Because we sampled and set stratum boundaries before all PY2019 projects were finalized, the final savings allocation by stratum does not fully match the targeted one-half allocation to each stratum.

Table 7-6. BSS Desk Review Sampling Summary

| Stratum | Number of Projects | | 1st Year Ex Ante Savings (kWh) | | |
|---|---|---|---|---|---|
| | Population | Sample | Population | Sample | % Sampled |
| 1 | 28 | 16 | 610,932 | 407,522 | 67% |
| 2 | 4 | 4 | 460,710 | 460,710 | 100% |
| **Total** | **32** | **20** | **1,071,642** | **868,232** | **81%** |

Based on the results of the desk reviews, we developed program-level realization rates for first year energy and demand savings. We developed these by aggregating the project-level results from the desk reviews, applying weights that reflect (1) the relative size of each project within the sample and (2) the probably of each project to be sampled. The program-level realization rates were then used to adjust the ex ante savings for the population of program projects.

## 7.3 Evaluation Results

### 7.3.1 Process Results

The results of the PY2019 BSS process evaluation are based on interviews with eight program participants and all five BSS Service Providers. The results are presented in the following subsections:

- Program Participation
- Barriers to Energy Efficiency Improvements and Program Participation
- Marketing
- Service Providers
- Training and Communication
- Customer and Service Provider Satisfaction

#### Program Participation

In PY2019, 14 unique Ameren Missouri customers completed 31 projects through the BSS Program. Program and implementation staff carefully managed participation due to high incentive levels (e.g., interior lighting is incentivized at 100% of eligible cost) and a limited, program-specific implementation budget. This was done through targeted outreach and a small network of only five Service Providers. Because completed projects were larger than expected, the PY2019 BSS Program served fewer participants and projects than initially planned but exceeded its savings targets. Towards the end of PY2019, the program ran up against its budget cap and slowed down additional participation.

PY2019 program participation was almost exclusively focused on lighting: All 31 PY2019 BSS projects included interior lighting; only one project also included two smart thermostats. There was no uptake of any other non-lighting measures offered through the program, which include cooking, refrigeration, and water heating measures; VFDs and compressed air; and other HVAC measures. This singular focus on lighting is likely the result of (1) higher lighting incentives relative to other enduses and (2) a provider network that is heavily focused on lighting.

PY2019 participants included a mix of customers offering family, social, and healthcare services with a majority of building types being classified as government, healthcare, faith-based, and educational. The

program appears to be successful in reaching a new market segment, with most of the interviewed BSS participants (6 out of 8 respondents) noting that their PY2019 project was their first participation in any of Ameren Missouri's incentive programs.

## Barriers to Energy Efficiency Improvements and Program Participation

One of the primary objectives of the BSS Program is to remove barriers to energy efficiency for social service organizations. Based on interviews with both participants and Service Providers – and consistent with program theory – the key barriers to energy-efficient upgrades among these organizations are cost, a lack of time, and a lack of knowledge of the benefits of energy efficiency upgrades.

The program has clearly been successful in overcoming these barriers, within the boundaries of program targets and budgets, for lighting equipment. However, PY2019 saw virtually no uptake in non-lighting equipment (with the exception of two smart thermostats), indicating that the program is currently not designed to overcome these barriers. Two factors appear to contribute to the lack of uptake of non-lighting measures:

- Incentive levels. While the program covers 100% of eligible costs for lighting measures, incentive levels for other enduses are smaller. One Service Provider reported that they had completed all lighting projects that were directed towards them but no HVAC projects, noting that the incentives for HVAC equipment are not attractive enough to induce upgrades, unless the existing equipment is about to fail.
- Service Provider specialization. Three of the five PY2019 Service Providers reported specializing in lighting equipment while two identified "general electric services" as their area of expertise. Only two of the five noted being able to provide HVAC services. Given the key role Service Providers play in identifying energy efficiency opportunities for customers, a broader set of Provider capabilities might be helpful in increasing the breadth of customer projects.

Apart from incentive levels for non-lighting equipment, interviewed participants and Service Providers identified few barriers to program participation. Those mentioned included (1) a lack of program awareness among eligible customers and (2) the limited program budget, with Service Providers noting that the money for the program in PY2019 ran out too quickly and participants reporting an interest in completing more projects or referring others (but being unsure of budget availability). Both of these barriers are a function of the program's limited goals for PY2019 and are not of concern going forward, unless the program wishes to increase participation levels.

## Marketing

As noted above, the program uses a targeted outreach approach to manage program participation and budgets. Notably, initial customer targeting is not done by the implementation team, but by Ameren's Corporate Contributions and Community Initiatives Group, which took a lead in defining the target market and generating leads. The group developed an initial list of 78 eligible customers (based on United Way qualifying criteria and the customers' location in opportunity zones within Ameren Missouri's service territory), who were then directly targeted with mailers. After prospective participants submitted applications through the online DonationXchange platform, their information was passed on to the BSS implementation team, which assigned each lead to one of the five Service Providers for follow-up.

The PY2019 outreach strategy appears to have been successful – the program met its target and plans to still use the initial list of 78 eligible customers for PY2020. All eight interviewed participants noted that email would be one of the best ways for Ameren to inform them of energy efficiency opportunities like the BSS Program. Two respondents also mentioned bill messaging as preferred way of receiving information.

## Service Providers

Service Providers are a key element of program delivery for the BSS Program. In PY2019, the program had five Service Providers, who had been hand-selected from the group of PY2018 SBDI Service Providers and invited to fulfill this role. According to program staff, three of the five Service Providers are diverse businesses.

Service Providers reported a number of benefits from participating in the BSS Program, including the ability to obtain project leads, helping customers who would otherwise not be able to receive energy efficiency upgrades, guaranteed payment after completing a project, and an opportunity to reach and fill a niche market of potential customers. Two of the five Service Providers reported that they had not worked with nonprofits prior to joining the BSS Program, and all five Service Providers noted that they completed more projects with nonprofit organizations than they would have without the program.

Service Providers offer a host of support services to participants. Based on interviews with participants, key types of assistance they received in PY2019 included walk throughs to assess opportunities for energy efficiency upgrades, explanations of the range of equipment eligible for the program, and explanations of the rules and processes of the program. Additionally, when applicable, participants received assistance from their Service Provider in completing and submitting project paperwork. In particular:

- All eight interviewed participants reported receiving a walkthrough from their Service Provider and information on the range of equipment that was eligible for program incentives.
- Five interviewed participants reported receiving explanations of the program rules and processes.
- Two interviewed participants also received help in completing project paperwork, while the others filled out the applications on their own.

Interviewed participants expressed high levels of satisfaction with their Service Providers. All eight interviewed participants reported that their Service Provider was very knowledgeable and supportive throughout the project. In the words of one participant:

> *"Again, this is where [the Service Provider] was wonderful, because there were some spreadsheet type things, documents. Maybe it was the application. To tell you the truth it was a little confusing, and [the Service Provider] said, 'Don't worry about it. I've got it. I've got all the information.' So I was very, very grateful for that."*

## Training and Communication

Even though the BSS Program was new in PY2019, Service Providers did not receive any BSS-specific training due to (1) their prior experience with the BizSavers programs given their status as existing SBDI Service Providers and (2) similarities in program delivery between the BSS Program and other BizSavers programs, most notably SBDI. The consensus from the Service Providers was that even without formal training, they received enough information to implement the program. In cases of uncertainty or questions, Service Providers reported that Ameren program representatives were readily available to address their needs.

While the Service Providers did not identify the lack of training as an issue, our research indicates that additional information and communication about this new program would have been beneficial to at least some of the Providers:

- Two Service Providers indicated that they would benefit from more information regarding the structure and organization of the program. They did not feel like the program was articulated well when they were first approached to participate by Ameren Missouri program staff, citing that they were not given

enough background information about the new program, how it would identify leads, and their responsibilities. In particular, one Service Provider reported needing additional clarity around their relationship with the customer. It was not clear to them what the expectations were as far as whether the Service Provider or Ameren Missouri was responsible for explaining program processes to the customer.

- Service Providers also appeared to have a limited understanding of why they could not generate their own leads or would not be guaranteed the project of a lead that they did generate. One Service Provider noted disappointment that the program had assigned a lead they had generated to another Provider. While the program may have a good reason for this process (i.e., better control over the number of applicants) and may not want to change it, clearer communication about roles and the lead generation process would help avoid frustration among Service Providers.

Interviewed program participants also reported some confusion due to lack of initial communication. Several respondents did not understand from the initial outreach what the BSS Program was, or they thought it was not legitimate or "too good to be true." These respondents stressed that they would have benefitted from earlier follow-up, either in person or over the phone. In general, there was no opportunity for direct interaction between the customer and the program until after submission of the application (although some interviewed participants did report earlier follow-up by the implementation team). Participants also could not find any information about the program on Ameren Missouri's website, leaving them with unanswered questions about their potential participation.

Additionally, the relationship between Ameren Missouri program staff and BSS Service Providers confused some participants. One participant reported the following:

> *"We're very appreciative of the program. It was fantastic. But when it started up it was kind of strange because I got the email from Ameren and then I followed up with that contact information on the program itself. Then the next thing I know I received information from [the Service Provider], and they almost represented themselves as 'we're taking care of this for you via Ameren' [...] I don't want to say they misrepresented or anything like that. I think it was just more us not understanding how the program actually worked, and then, like I said, then this company just coming in and starting off like, 'Oh, well we're your company,' which I said, 'Okay. Whatever. You're going to give us free lighting. We'll do that. I don't really care.' But after we got into the program a little more it kind of looked like, you know, I guess we could have really had our own local vendor that we use come in and do the same thing."*

## Customer and Service Provider Satisfaction

Both participants and Service Providers were extremely satisfied with the PY2019 BSS Program.

All eight interviewed participants indicated that they were "very satisfied" with their Service Provider, the BSS Program as a whole, the walk-through from their Service Provider, their interactions with Ameren Missouri program staff, and the equipment that was installed in their facilities. Some participants also reported energy/bill savings following completion of their BSS project, although others indicated it was too soon after the project to have observed a change. Energy/bill savings are an important outcome of program participation since a key reason for participation, uniformly noted by interviewed participants, is long-term cost savings that ultimately create more money for the organization to dedicate to their social services.

In particular, one participant was pleased by the ability to participate in the BSS Program because their previous lighting had literally become a fire hazard in their facility, and they were reaching a point where they

would have had no choice but to front the entire cost of the replacements themselves. The customer said the program was a "godsend" to their organization, reporting:

> *"You know from a money, from a cost savings standpoint, from a safety standpoint, I think we're very, very happy. We don't have those concerns that our building is going to catch on fire [anymore]."*

However, one area of slight dissatisfaction that emerged from the participant interviews centered around communication with Ameren staff. While participants were overall very satisfied with their interaction with program staff, there were instances of confusion and a desire to have more dialogue. One participant indicated difficulty in navigating the Ameren Missouri website, citing that they wanted to get information specific to a church, but were unable to distinguish among the programs where they should apply or could learn more. Similarly, a program participant reported that she would have liked to have had more direct communication with Ameren Missouri staff. The participant noted:

> *"Ameren only has so many resources, but you submit an application online and then then you don't have any kind of relationship with anybody. And then the Board is [asking me] what do you think our chances are? And I said I don't know because I didn't talk to a human being… So Ameren is like a mile down the road from us but, I don't know, the opportunity to personally thank you, you know acknowledgement and all that but just for that relationship building piece is the only thing that I would say that I kind of missed through the process."*

Two participants also indicated a desire to expand the incentive opportunities with the BSS Program. One participant reported having wanted to receive upgrades on their HVAC equipment, while the other would have liked to see outdoor lighting and interior lighting for new construction included.

Service Providers highlighted their satisfaction with program and their ability to participate in it. In addition to providing more leads and projects for their company, the program allows Service Providers to operate in a currently underserved market. They appreciate this both for the additional work and the humanitarian aspect of helping these communities. One Service Provider noted:

> *"I hope they are doing [the BSS program] again in 2020. Like I said, you can see the differences in just the people that work there, and everyone gets excited about doing new upgrade projects. I think there is a ton of value outside of the money of doing these projects. Obviously, they are good projects for our company to do. But that is why I don't mind… like one of the places we did change out all of their can lights with those pen based CFL bulbs and I donated $2,000 in manpower and then my distributer for that product, 70% of the cost of the fixtures that we used to replace them. Like I said, I like to see the difference that you can make immediately. And you don't get that on the commercial side."*

As noted above, two areas of slight dissatisfaction, at least among a subset of Service Providers, are incentive levels for non-lighting equipment and the inability to keep projects for which they generated the lead. In addition, Service Providers noted the speed of incentive payments as an issue: Three of the five Service Providers indicated that the turnaround time for receiving incentive payments from Ameren was either too slow or fluctuates too much. Because the BSS Program covers 100% of the cost for the customer, Service Providers bear more upfront cost than for similar projects in other BizSavers programs. One respondent reported having to wait nearly two months for $39,000 worth of project work. However, a different Service Provider noted that they are using progress billing on one of their larger BSS projects. Progress billing (the practice of obtaining interim payments for completed portions of a larger project), or some other form of

accelerated payment structure, could act as an option for BSS Service Providers when they are bearing larger project costs. If available, this option should be communicated to BSS Service Providers.

### 7.3.2 Gross Impact Results

This section summarizes gross impact results for the PY2019 BSS Program. Ex post gross savings are based on desk reviews for a sample of 20 BSS projects, extrapolated to the population.

Table 7-7 compares ex ante and ex post first year and last year gross savings, at the program level. As shown, the program achieved first year ex post gross energy and demand savings of 1,106 MWh and 0.22 MW, respectively, as well as last year ex post demand savings of 0.02 MW in the 10-14 Year EUL category and 0.19 MW in the 15+ Year EUL category.

Table 7-7. PY2019 BSS Annual Savings

| | Ex Ante Gross | Gross RR | Ex Post Gross |
|---|---|---|---|
| **First Year Savings** | | | |
| Energy Savings (MWh) | 1,072 | 103.2% | 1,106 |
| Demand Savings (MW) | 0.21 | 105.0% | 0.22 |
| **Last Year Demand Savings** | | | |
| < 10 EUL (MW) | - | n/a | - |
| 10-14 EUL (MW) | 0.02 | 105.0% | 0.02 |
| 15+ EUL (MW) | 0.18 | 105.0% | 0.19 |

All gross RRs for the BSS Program were above 100%. Based on the desk reviews, we made the following adjustments to ex ante savings assumptions. The results of the desk reviews are more fully documented in Appendix G.

- **Waste Heat Factor (WHF) and Interactive Factor (IF).** To calculate ex ante savings for all LED measures, the program implementer applies a modeled Heating and Cooling Interaction Factor (HCIF) of 1.07, encompassing waste heat factors and heating penalties (referred to as IF in the Ameren Missouri TRM). In contrast, the evaluation team applied building-specific WHFs and IFs for the sampled BSS projects, based on project documentation and in accordance with the Ameren Missouri TRM. Based on our analysis, ex post WHFs ranged from 1.04 to 1.21 with an average value of 1.12 across all 20 sampled projects. In addition, 5 of the 20 sampled sites were identified as having electric heating, with a range of IFs from -0.21 to -0.09, resulting in an average across all sampled projects of -0.04. Differences in application of the WHF and IF were the primary driver of the RRs for energy and demand savings.
- **Measure Characteristics.** In three of 20 sampled projects, the evaluation team identified discrepancies between measure information in the program-tracking data and the desk reviewed product specifications and invoice documents. These adjustments had a minimal positive impact on program savings.

Table 7-8 presents ex ante and ex post last year gross demand impacts by measure type and EUL category. As shown, the majority (89%) of last year demand savings comes from the 15+ Year EUL category, with T12 replacements accounting for the largest share.

Table 7-8. PY2019 BSS Program Annual Last Year Demand Impacts

| Measure Category/End-Use | 10-14 Year EUL | | | 15+ Year EUL | | |
|---|---|---|---|---|---|---|
| | Ex Ante (MW) | Gross RR | Ex Post (MW) | Ex Ante (MW) | Gross RR | Ex Post (MW) |
| LED Replacing T12 | - | n/a | - | 0.10 | 105.0% | 0.10 |
| Other Linear LED | <0.01 | 105.0% | <0.01 | 0.07 | 105.0% | 0.07 |
| Other Non-Linear LED | 0.02 | 105.0% | 0.02 | 0.01 | 105.0% | 0.01 |
| LED Replacing Incandescent A-Lamp | - | n/a | - | 0.01 | 105.0% | 0.01 |
| HVAC | <0.01 | 105.0% | <0.01 | - | n/a | - |
| **Total** | **0.02** | **105.0%** | **0.02** | **0.18** | **105.0%** | **0.19** |

### 7.3.3 Net Impact Results

Because the BSS Program falls under the umbrella of low-income programs, we applied a default NTGR of 1.0, assuming that both free ridership and spillover are zero. As such, net impacts for the BSS Program are equal to the gross impacts presented in the section above.

## For more information, please contact:


### Antje Flanders
### Vice President

617-301-4643 tel
617-497-7944 Fax
aflanders@opiniondynamics.com

1000 Winter Street
Waltham, MA 02451